

FIRST INTERNATIONAL
CONGRESS OF FSA

6-9 OCTOBER 2022, SKOPJE, NORTH
MACEDONIA



MEDICINE OUT OF THE BOX



BOOK OF ABSTRACTS

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Faculty Student Assembly
FSA

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Ivana Baloska, Afrodita Joveska
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WELCOMING NOTES

A Letter from the Dean

Prof. Dr. Sonja Topuzovska

Dear students,

It is my great honor and privilege as a/the Dean of the Medical Faculty at the University Cyril and Methodius and on behalf of the entire teaching staff of the Faculty to welcome the organization of the First International Congress of Faculty Student Assembly, that takes place in the center of Macedonian history and our capital town Skopje from 6-9 October 2022.

The First International Congress of Faculty Student Assembly will be organized for the first time and I hope that it will become a tradition in the years ahead.

Extraordinary working and living circumstances caused by the global pandemic imposed new working conditions, engagement of additional resources and reorganizing of the regular work processes both in the field of education and in the health segment. I would like to proudly point out that during the pandemic, students were actively involved and helped dealing with it. First in the epidemiological services, then at the vaccination points, and some of the students in the COVID centers. By doing so, they showed their humanity and their willingness to learn and acquire skills.

In pandemic conditions, online communication was the only alternative and in the past two years no professional and scientific events were organized with physical presence. Therefore, the Medical Faculty is even more pleased to support the First International Congress of Faculty Student Assembly.

This year, the Medical Faculty in Skopje celebrates 75 years since its establishment, and I want to emphasize that for seventy-five years the Faculty has an important place in the educational, scientific and health care development of the country. Historically, in the entire period of its existence and work, the Faculty of Medicine follows, applies and upgrades the modern scientific knowledge and achievements. Over 3000 students and 652 teachers and assistants engaged in the teaching process represent a serious staff potential for education and scientific research work.

This Congress will be held in the amphithea
ters and lecture halls of the Medical Faculty and will be attended by over 250 students from 15 countries. During the Congress, all participants will have the opportunity to listen to lectures on various topics by experts from our Faculty, the region and beyond. The main topic of the Congress is "Medicine Out of the Box", which will emphasize seeing medical problems from different perspectives in order to inspire students to expand their knowledge of differential-diagnostic thinking.



The participants of the Congress will have the opportunity during the lectures and workshops to hear, learn and exchange knowledge from different medical fields. As well, it is especially important that medical students will have the opportunity to acquire practical skills that will help them further in their professional realization. Therefore, I invite you to join and participate, as many as possible.

I want to express my gratitude to my colleagues students from Faculty Student Assembly for the idea and commitment they are making for the organization of the Congress and special thanks to the invited lecturers who with their participation will enable the realization of this event.

Dear colleagues, dear students, I wish you a successful realization of the Congress and nice moments of socializing together.

Dean,
Prof. Dr. Sonja Topuzovska



A Letter from the President

Ivana Baloska, President

As the current president of FSA and First ICOF, it is a great honor for me to say that the four days of the First International Congress of the FSA have passed successfully. The fact that we had the opportunity to see you, the participants, in such a large number is an excellent indicator that what we had hoped for resulted in great interest among the students who are eager for the next congress.

The inspiration to organize this congress for the first time came from the fact that we wanted to show the beauty of medicine outside the standard lectures, or as we like to say, to show medicine out of the box. The students had the opportunity to listen to a lot of wonderful lectures and be a part of many workshops which were led by renowned professionals from the medical field in our country, as well as several guests from the United States of America, whose presence made us particularly honored.

The range of topics was quite diverse and every student had the opportunity to participate in something that is not seen nor heard in the typical lectures. I am sure that the selected topics allowed the participants to gain a lot of new knowledge that will be useful to them in the future, considering the fact that these generations are the future of the healthcare system.

After these four incredibly fulfilling and interesting days, I hope that this First International Congress of FSA will evolve into a tradition for our faculty and students. I would like to express my gratitude to the University of Ss. Cyril and Methodius, the Faculty of Medicine, the Medical Simulation Center, the Macedonian Medical Association, all the generous sponsors and the entire organizational team (the OC team), without whom this Congress would not become reality.

In order to make this Congress accessible to the students, participation was free of charge thanks to the University of Ss. Cyril and Methodius, and the Faculty of Medicine who allowed us to use their funds for covering all organizational costs.

The Faculty of Medicine in Skopje with all its members and employees provided us with unreserved support for planning, organizing and realizing this three day event, and I sincerely thank all the professors and lecturers and the Macedonian Medical Association from the bottom of my heart, because without their will to share their knowledge with the students this Congress would not have happened.

The students had the chance to see, hear and learn something unusual and



extraordinary from the best medical professionals in our country, and that feeling is irreplaceable and indescribable for every student. I would like to address a huge thank you to the Medical Simulation Center who provided us with the amazing opportunity to participate in workshops that include advanced training techniques that allow our future doctors to be prepared for the challenges they will face every day. Once again, I express my gratitude to all the participants for their attendance, dedication and desire to be part of this event.

We, the OC team, enjoyed the whole process of planning and carrying out this Congress, which, although was long and laborious, resulted in an extremely good event. We had a lot of fun and enriched ourselves with knowledge and new acquaintances these few days. We sincerely hope that every participant and every lecturer had a great time and we hope that this first event of this caliber at our faculty will remain in the memory of all of us.

See you in the next opportunity for making new friendships and building knowledge!

President,
Ivana Baloska





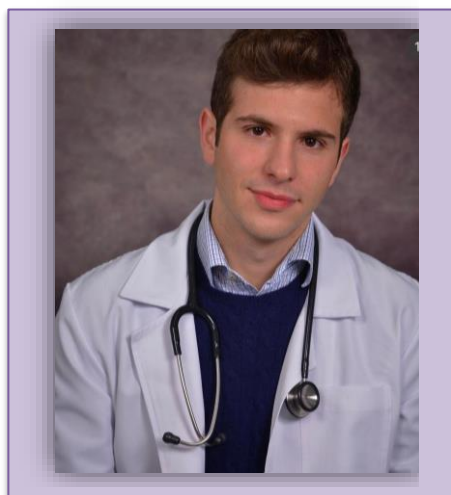
THE ORGANIZING COMMITTEE



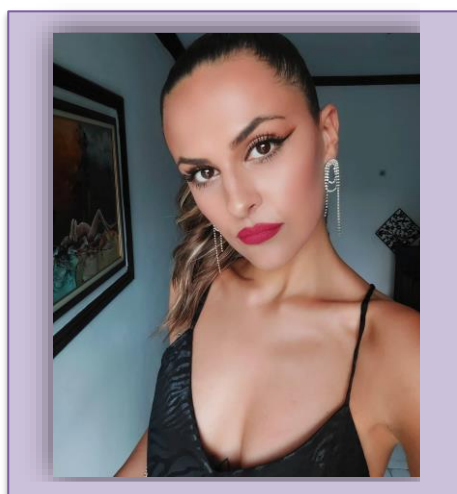
MEET THE TEAM



Ivana Baloska - President

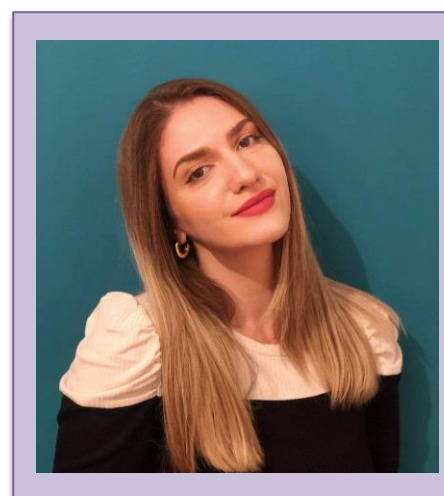


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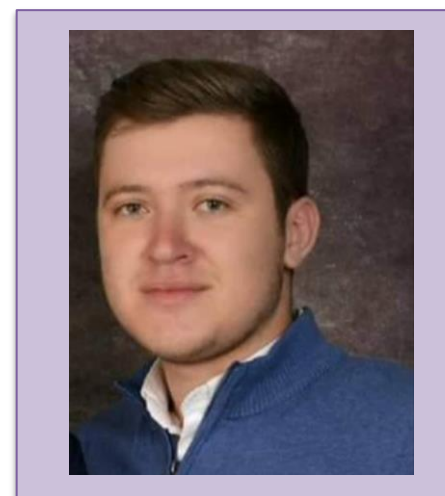
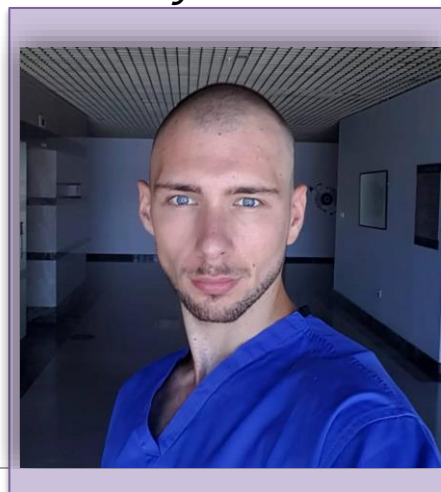
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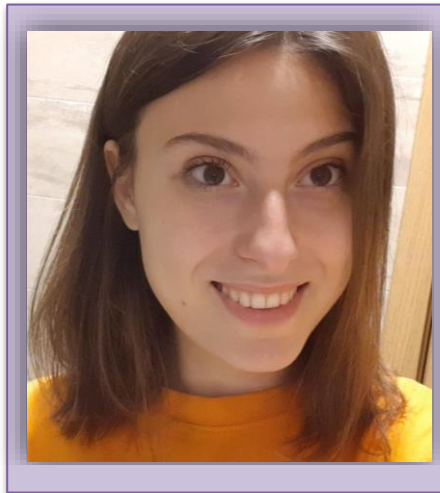
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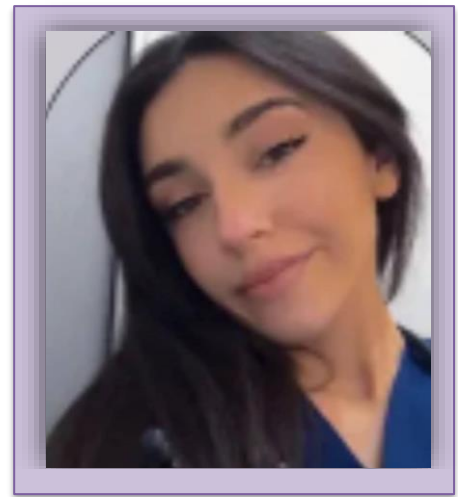
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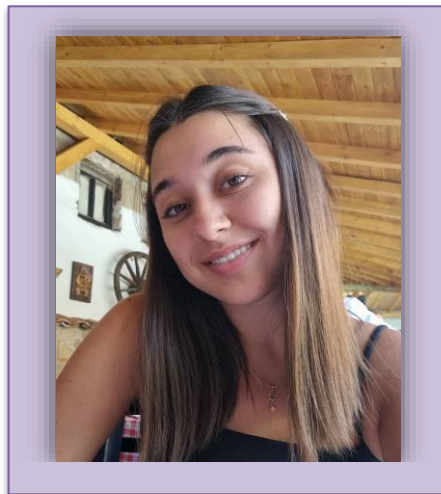
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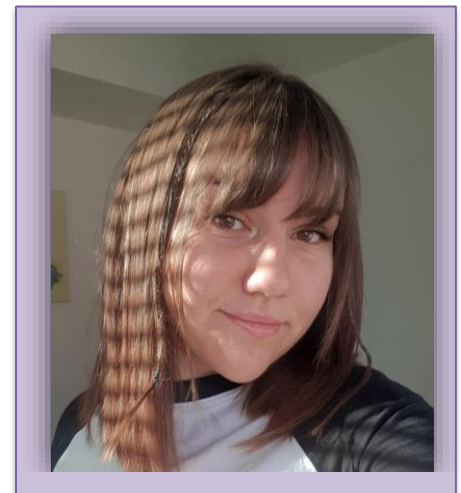
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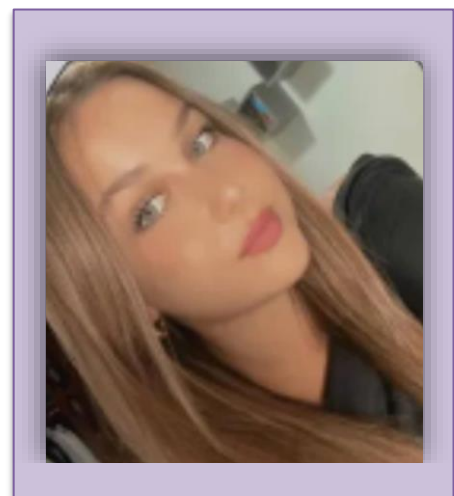
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BOOK OF ABSTRACTS

Coitus per Urethram – A rare Clinical Entity with Significant Impact on Female Sexual Function

Author: Ass. Prof. Dr. Ognen Ivanovski

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Background: Urethral intercourse is a very rare entity which usually presents as urinary incontinence during and after intercourse and is most commonly seen in patients with vaginal agenesis (Mayer- Rokitansky-Hauser Syndrome) or hypoplasia, or other rear vaginal anomalies.

Aim: To evaluate management and outcomes for vaginal and urethral consequences of urethral intercourse, including urinary incontinence.

Methods: Between February 2006 and March 2021, 8 women aged from 17 to 22 years underwent genital and urethral reconstruction due to consequences of urethral sexual intercourse. Vaginal reconstruction included sigmoid vaginoplasty and introitoplasty with division of the vaginal septum in cases of vaginal agenesis (5 cases) and vaginal duplication (3 cases), respectively. Incontinence was treated by sling procedures in 5 women with longer history of urethral coitus and evident bladder neck prolapse.

Outcomes: Sexual and psychosexual outcomes assessment was based on the Female Sexual Function Index and standardized questionnaires.

Results: Follow-up ranged from 9 to 188 months (mean 78 months). Good esthetical and functional results were achieved in all 8 women. All patients reported satisfactory sexual intercourse. All 5 incontinent women who had underwent sling procedure were continent. In one of 3 nontreated cases, additional sling treatment was indicated 6 months after vaginal reconstruction with satisfactory outcome. One patient with vaginal duplication reported a successful pregnancy with a Caesarean section delivery.

Clinical implications: Urinary incontinence with megalourethra in young women, along with the presence of Mullerian anomalies should raise suspicion of urethral coitus. Surgical treatment includes correction of vaginal anomalies and management of consequences.

Conclusion: Urethral intercourse is very rare, but it can cause severe consequences. It is important to recognize this occurrence and treat it by well-known vaginal or urethral reconstructive procedures.



Disaster Medicine: How to Be Better Prepared for Future Disasters

Author: Prof. Dr. Biljana Kuzmanovska

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According to the World Health Organization definition of disaster is: *"A disaster is an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community."*

A disaster is also defined by the International Federation of Red Cross: *"Disaster is a sudden calamitous event that seriously disrupts the functioning of the community or society and causes human, material and economic or environmental losses that exceed the community's or society's ability to cope using its own resources."*

Disasters can be natural (*biological, geophysical, hydrological, meteorological, climatological*), or human caused (*war/ terrorism, traffic, industry*).

According to Lesley Sheehan & Kenneth Hewitt, a major disaster is an event that causes:

- At least 100 human deaths;
- At least 100 injured;
- Economical damage to society of at least one million dollars.

Medical response to disasters is a subject of the medical field called disaster medicine, which incorporates principles of emergency medicine. Principles of disaster medicine are: prevention, preparedness and first response to a disaster; early recovery, rehabilitation of the healthcare system and society, and finally, development, e.g, preparation of the health care system for future disasters based on the experiences acquired from previous disasters.



Stress Management: Shine bright, but don't burn out

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SARS-CoV-2 has caused two pandemics – one of them is *the COVID-19 pandemic* and the other one is a *pandemic of mental health disorders*.

A lot of research data shows that there is a 30-50% increase in anxiety and depression. In the majority of the cases there is post-traumatic stress disorder (PTSD) associated with COVID-19 which follows after a death of someone from the family circle or a close friend.

What is most worrisome are the results that come from the surveys conducted on younger population which are alarming and ask for immediate intervention. The most disturbing phenomenon which is alarming is the increase in suicidality rates from 5% before the pandemic to 10% especially among those who have sexual identity issues, come from lower-income social class, are victims of domestic violence and bullying.

Among the risk groups are the medical students and medical workers especially those involved actively in dealing with COVID-19 patients and their complications. Poor workplace conditions, long working hours, bad interpersonal relationships, poor safety measures at the workplace which lead to increase in fear, security and insecurity about their wellbeing as well as about those who are close to them – which leads to physical and mental exhaustion.

It's essential to make changes in the studying curricula so that the emphasis is not put only on producing future professional medical workers but also providing them with appropriate care for their mental health as students and in the future.

This can be achieved through:

1. Education about mental health
2. Planning and creating support services
3. Local and national strategies
4. Psychological interventions
5. Cognitive behavioural therapy (CBT)
6. Trauma-focused therapy
7. Narrative therapy
8. Supportive therapy
9. Pharmacological therapy

In conclusion, the COVID-19 pandemic affects not only our physical wellbeing yet our mental health as well and that is why it is important to increase the awareness and care about it.



Identifying Scientific Dishonesty and How to Avoid it

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The increase in research activities among health professionals as well as medical and/or doctoral students has led to concerns regarding ethical, but not less important legal issues.

Therefore, it is important to be familiar with relevant publications that serve as a guide to promote integrity, compliance, and ethical standards in the conduct and report of the research results. Researchers must respect the person who is engaged in research and protect the life, health, dignity, integrity, privacy, and confidentiality of the personal information of research subjects.

Thus, ethically acceptable strategies for recruiting participants into clinical studies must be applied. Any kind of conflict of interest when individual professional or ethical obligations may be compromised for their benefit at any part of the research process should be avoided.

Furthermore, breaching the confidentiality and/or privacy of the participants is another lack of protection with ethical, and even legal consequences. And one of the most frequent dishonesty is research misconduct defined as fabrication, falsification, or plagiarism in proposing, performing, reviewing research, or reporting research results that have a high cost in damaging self and others.

However, when we are speaking of research integrity, it is of vital interest to throw the light on whistleblowing or reporting the act that harms or endangers the public interest and through the light of this act as acceptable behavior.

There are a lot of examples of dishonesty in the past among the research community with the different reactions from those who should be responsible, that will be presented during this workshop. Thus, the main goal of the interactive sessions that will follow, will be to get feedback from the students, assess their way of thinking, and reveal their capabilities to identify conditions that lead to misconduct or fraud, to learn how to prevent such practices and keep scientific integrity.



Dermoscopy the Essential Tool in Diagnosis of Pigmented Skin Tumors

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Dermoscopy (also known as epiluminescence microscopy, dermatoscopy and amplified surface microscopy) is an in vivo non-invasive method for observation of pigmented skin lesions. Dermoscopy requires optical magnification and liquid immersion. With dermoscopy, we can visualize the structures which are not visible to the naked eye, like structures in the epidermis, dermo-epidermal junction, superficial and reticular dermis. These morphological features (dermoscopic structures) have specific histopathological correlation.

By understanding the histopathological equivalents of such structures, the investigators are able to understand the dermoscopic structures better and to make a distinction between benign pigmented vs malignant pigmented skin lesions. The *first step* in performing a dermatoscopic evaluation of a lesion is to determine whether it is *melanocytic* or *non-melanocytic* (not all pigmented lesions are melanocytic). The classification is based on certain structures (*network, pseudonetwork, globules, streaks, homogenous blue pigmentation, parallel pattern*). If the lesion does not have any positive criteria for a melanocytic lesion, it needs to be considered, by default, to be melanocytic/non-melanocytic. If the lesion meets the criteria for melanocytic lesion, the *second step* in the two-step algorithm can be applied. With the second step we can differentiate benign nevi and melanoma, by using the dermoscopic algorithm 'pattern analysis', the ABCD rule, the Menzies method and the 7 point checklist.

Colors in dermoscopy depend on the location of the melanin in the skin (black-str.corneum, brown-epidermis, gray-upper dermis, steel blue-medium dermis). Other colors seen in dermoscopy are *red* (inflammation, vascularity), *white* (depigmentation, scarring), *yellow* (hyperkeratosis, sebaceous material), *orange* (serum), *jet black* (congealed blood).



Metabolic Syndrome

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*Institute of Pathophysiology and Nuclear Medicine „Acad. Isak S.
Skopje, R.N.Macedonia*



Metabolic syndrome is a common term for a group of conditions that together raise the *risk of coronary heart disease, diabetes, stroke, and other additional serious health problems*. Metabolic syndrome can also be related as insulin resistance syndrome.

One might have metabolic syndrome if three or more of the following conditions are present:

- **A large waistline:** This is also called abdominal obesity or "having an apple shape." Extra fat in the stomach area is a bigger risk factor for heart disease than extra fat in other parts of your body.
- **High blood pressure:** If the blood pressure rises and stays high for a long time, it can damage the heart and blood vessels. High blood pressure can also cause plaque, a waxy substance, to build up in the arteries and promote atherosclerosis. Plaque can cause heart and blood vessel disease such as heart attack or stroke.
- **High blood sugar levels:** This, among other, can damage the blood vessels and raise the risk of getting blood clots.
- **High blood triglycerides:** Triglycerides are a type of fat found in the blood. High levels of triglycerides can additionally raise the levels of LDL cholesterol, referred as the bad cholesterol. This raises the risk of heart disease.
- **Low HDL cholesterol, referred as good cholesterol:** Blood cholesterol levels are important for heart health. "Good" HDL cholesterol can help remove "bad" LDL cholesterol from the blood vessels. "Bad" LDL cholesterol can cause plaque buildup in the blood vessels.

Metabolic syndrome is common worldwide. About 1 in 3 adults have metabolic syndrome. The good news is that it is largely preventable. Knowing the risk factors and making healthy lifestyle changes can help lower the chances of developing metabolic syndrome or the health problems it can cause.



Cerebrovascular Disease

Author: Prof. Dr. Dragana Petrovska-Cvetkovska

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The word cerebrovascular is made up of two parts – "*cerebro*" which refers to the large part of the brain, and "*vascular*" which means arteries and veins. Together, the word cerebrovascular refers to blood flow in the brain.

The term cerebrovascular disease includes all disorders in which an area of the brain is temporarily or permanently affected by ischemia or bleeding and one or more of the cerebral blood vessels are involved in the pathological process. Cerebrovascular disease includes *stroke, carotid stenosis, vertebral stenosis and intracranial stenosis, aneurysms, and vascular malformations.*

Restrictions in blood flow may occur from vessel narrowing (*stenosis*), clot formation (*thrombosis*), blockage (*embolism*) or blood vessel rupture (*hemorrhage*). Lack of sufficient blood flow (ischemia) affects brain tissue and may cause a stroke.

Stroke is an abrupt interruption of constant blood flow to the brain that causes loss of neurological function. The interruption of blood flow can be caused by a blockage, leading to the more common ischemic stroke, or by bleeding in the brain, leading to the more deadly hemorrhagic stroke. Ischemic stroke constitutes an estimated 80 percent of all stroke cases. Stroke may occur suddenly, sometimes with little or no warning, and the results can be devastating.

There were an estimated 157,803 cerebrovascular-related deaths in 2003; 138,397 of which were in people age 65 and older. Cerebrovascular disease is the most common life-threatening neurological event in the U.S. Stroke is the third leading cause of death in the United States. Stroke is a leading cause of serious long-term disability, with an estimated 5.4 million stroke survivors currently alive today. Every year, an estimated 30,000 people in the United States experience a ruptured cerebral aneurysm and as many as 6 percent may have an unruptured aneurysm. Arteriovenous malformations (*AVMs*) are present in about 1 percent of the general population. The risk of hemorrhage from an AVM is 4 percent per year with a 15 percent chance of stroke or death with each hemorrhage.



Abdominal Pain: Problem Based Learning

Authors: Prof. Dr. Katarina Stavrikj, Medical Student Damjan Pavlov

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Problem based learning is one of the best and most fruitful educational methods which helps medical students in developing skills necessary for gaining appropriate knowledge in order to take proper history from the patients, conduct a physical exam and order complementary laboratory exams.

Acute abdomen is a clinical entity which presents as a mesh of various signs and symptoms accompanied mainly by pain and tenderness which asks for surgical therapy. This definition might not seem difficult at first sight but it doesn't represent the seriousness that this clinical entity carries. It is exceptionally hard and important to make the right diagnosis because there are a lot of clinical diagnoses which are included.

Through this workshop we shall work on a few cases of acute abdomen through problem based learning which helps in developing out-of-the-box thinking process.

The cases will allow the students to use their accumulated and interdisciplinary knowledge in solving the clinical problems. The students will take proper history of the signs and symptoms, generate differential diagnoses and offer proper treatment plan. An emphasis will also be put on cultural characteristics of the patients, their beliefs about health, the epidemiological characteristics of one population and evidence based medicine.

Through this workshop the participants will be reminded of the essential importance of physiology, pathophysiology and pharmacology in order to make a proper diagnosis and treat the patient holistically.



List of Occupational Diseases and Guidelines for Verification of Occupational Diseases in Practice

Authors: Prof. Dr. Sasho Stoleski, Prof. Dr. Dragan Mijakoski

Institute for Occupational Health of North Macedonia, Skopje, R.N.Macedonia



Occupational diseases from a medical point of view are defined as diseases that occur as a direct and unique consequence of exposure to harmful factors from the work environment. According to the current Law on Pension and Disability Insurance, occupational diseases are defined as diseases caused by a prolonged direct impact of the process and conditions of work on the work ability of the insured person.

The term "*occupational*" refers to the etiological and not the nosological features of these diseases. Namely, occupational diseases according to their pathohistological and pathophysiological characteristics, as well as according to clinical manifestations, diagnostic procedures and therapeutic modalities do not differ from the same diseases that do not have an occupational etiology. Occupational etiology is proven by confirming the cause-and-effect relationship of the disease with the specific occupational exposure, and the therapeutic approach to these diseases includes the cessation of occupational exposure, which, depending on the nature of the disease and conditions in the working environment, can be temporary or permanent. Occupational diseases can end with a complete patient recovery without consequences for the working ability, but they can also lead to reduced or lost working ability, physical damage or death.

Despite the great progress in science and technology, work organization and the application of protective measures, the number of occupational diseases is high and constantly growing. On the other hand, the under-diagnosis of occupational diseases, especially their mild forms, as well as insufficient reporting of these diseases is a problem in many number of countries worldwide, including in our country.

The legal aspect of occupational diseases implies the legislative regulation of the rights of insured persons suffering from occupational diseases. This matter is legally regulated by the so-called List of occupational diseases in which the legislator lists the occupational diseases in order and prescribes the conditions and criteria for their diagnosis and verification. In our country this matter is regulated by the List of occupational diseases of R. Macedonia, since 2004 (Rulebook on the List of occupational diseases, "Official Gazette of the Republic of Macedonia" no. 88/04), which derives from the Law on Pension and Disability Insurance. Many countries in the world use the



ILO List as the basis for their national lists of occupational diseases, while EU members recommend the EU List of Occupational Diseases which is a model for the List of occupational diseases of R. Macedonia as well. Annex I of the List consists of 108 diseases divided into five groups, while Annex II of the List presents an additional list of diseases (48 diseases) which are suspected to be occupational in origin, which should be subject to notification and which may be in at a later stage considered for inclusion in Annex I of the List.

The rights of those suffering from occupational diseases regarding their diagnosis, treatment and rehabilitation, as well as compensation for the resulting illness, are regulated by the laws on health, pension and disability insurance of individual countries in accordance with international conventions and recommendations.

According to the current legislation of R. N. Macedonia, the diagnosis and verification of occupational disease is carried out at the Institute of Occupational Health of RSM. The patient with the expertise for a verified occupational disease, with appropriate medical documentation, is referred to the commissions for work ability assessment at the Pension and Disability Insurance Fund. These commissions make a decision on the acquisition of rights based on an occupational disease, that is, a decision on compensation for the resulting disease.

The registration, that is, the reporting of occupational diseases is a legal obligation according to the current Law on Health Records. Reported occupational diseases should be entered in the so-called register of occupational diseases, through which insight into the frequency of individual diseases and workplaces where they occur is obtained. This should enable the targeting of preventive activities and improvement of health and safety at work for other workers. Also, occupational disease registry data can provide an overview of the direct and indirect costs caused by occupational diseases. The statistical monitoring and recording of occupational diseases according to the EU legislation, with which our legislation is harmonized, is carried out according to the model of the so-called European Occupational Diseases Statistics (EODS).



Surgery Cases Out of the Books

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Being a medical student is difficult on many levels, one of them being the amount of textbooks one has to read, understand and remember. What these textbooks do very well is provide an abundance of information which is essential for a future doctor who will practice evidence based medicine.

However, what these textbooks don't do is prepare the students for real - life scenarios. One of the most common problems every medical student experiences at some point in their studies and/or clinical practice is not seeing the bigger picture. But, with some experience which comes after a few years of clinical practise and a few thousand patients this problem goes away.

Through this workshop I will try to speed up that process and give the students a glimpse of how it's like to deal with actual and real life clinical scenarios.

The main focus will be put on clinical cases from abdominal surgery which are taken from actual patients with real diagnoses and outcomes. We will pay attention to key skills: critical thinking, analyzing patient data, laboratory reports and CT scans.



From Physiology to Syncope- Varios Faces of Rhythm and Rate Disturbances

Understanding the Pathophysiology of Arrhythmias

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Arrhythmias are common and diverse abnormalities of the heart's electrical system which may arise from disruption in the frequency, rhythm, site of evocation and transmission of electrical potentials in the heart. They can be manifested in any age group but are more common among older population. The hemodynamic consequences depend on the type and duration of the arrhythmia.

The most common classification is dividing them in *two groups*: bradyarrhythmias (*abnormally slow resting heart rate – below 60 beats per minute*) and tachyarrhythmias (*rapid heart rhythm, regular or irregular, with a rate above 100 beats per minute*). The pathophysiological mechanism is based on disturbances in evocation or transmission of the heart's electrical impulses as a result of inherited or acquired conditions which lead to changes in electro-physiological and metabolic characteristics of the myocardium.

The mechanisms of spontaneous evocation of electrical potentials include:

- Change in the speed of spontaneous diastolic depolarization;
- Change in the rest potential and
- Change in the threshold potential.

These changes can lead to an increase or a decrease in the heart's rhythm. Conduction of electrical impulses may be affected at the *sinoatrial node*, *atrioventricular node* (first, second and third degree blocks), *Hiss-node branches* (right and left branch) and *their branches* (left anterior and left posterior hemiblock).

When there are accessory atrioventricular pathways they can result in re-entry arrhythmia which means that there is a self-sustaining cardiac rhythm abnormality in which the action potential propagates in a manner analogous to a closed-loop circuit.

Arrhythmias can be present among healthy people and it doesn't mean that they are associated with another heart problem.



From Physiology to Syncope- Varios Faces of Rhythm and Rate Disturbances

Physiological Basis of Electrocardiography

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The aim of this workshop is to enable the participants to understand the theoretical and practical aspects of recording and interpreting an *electrocardiogram (ECG)*.

What makes an ECG possible is the ability of excitable cells (nerve and muscle cells which have resting membrane potentials) to receive, generate and conduct electrical impulses i.e. action potentials (APs) which are then recorded with the help of electrical devices which have the ability to register, amplify and record those impulses accordingly.

In order to interpret an ECG it is essentially necessary to have sufficient knowledge about the anatomy and physiology of the heart.

Through the theoretical part of this workshop the participants will learn the principles of the creation and conduction of APs through the heart muscle and consecutively their recording through the standard method known as electrocardiography. After that, the participants will be introduced to the basic parameters and elements that are analyzed in an ECG of a healthy individual.

In the second part of the workshop the students will be able to practically learn the technique of recording an ECG on a healthy subject and then recognize and interpret the basic elements which constitute an ECG.

From Physiology to Syncope- Varios Faces of Rhythm and Rate Disturbances

From Pathophysiology to Clinical Presentation Through Recording Surface Electrocardiogram

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Various different pathophysiological mechanisms generated from the conduction system of the heart, myocardium per se, or systemic electrolyte disturbances, hypoxia, acidosis, etc., can have as an end-results variety of electrocardiographic presentations, necessitating urgent therapeutic action/s.

Syncope, and the most severe clinical presentation - cardiac arrest are impressive clinical presentations. How do we recognize them?

Transient loss of consciousness due to cerebral hypoperfusion, characterized by a rapid onset, short duration, and spontaneous complete recovery, known as syncope is categorized as one of four: reflex mediated, cardiac, orthostatic, and cerebrovascular. Cardiac syncope can be a result of intermittent bradycardia, rapid supraventricular tachycardia (SVT), or VA.

The most severe cases are those that result with cardiac arrest - situation characterized as loss of consciousness, stop of breathing and circulation. It can happen in two ECG scenarios: non-shockable rhythms (asystole and pulseless electrical activity), and/or shockable rhythm: ventricular fibrillation and pulseless ventricular tachycardia.

How do we urgently treat them?

Urgent treatment is comprehensive treatment with medications, good quality chest compressions, supportive ventilation, temporary pacemaker and use of electrical power for electrical cardioversion and/or defibrillation, in order to restore regular rhythm and consciousness.

This workshop will continue with practical demonstration and use of manual defibrillator in the Medical Simulation center.



Staying Alive: Basic and Advanced Life Support

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Basic Life Support (BLS) is the foundational course for healthcare professionals and trained first responders who provide care to patients in a wide variety of in-facility and prehospital settings.

The BLS course trains participants to promptly recognize several life-threatening emergencies, give high-quality chest compressions, deliver appropriate ventilations and provide early use of an AED (automated external defibrillator).

Adult advanced life support (ALS) includes the advanced interventions that follow BLS and use of an AED.

BLS continues during and overlaps with ALS interventions.

This ALS section includes the prevention and treatment of both *in-hospital cardiac arrest (IHCA)* and *out-of-hospital cardiac arrest (OHCA)*, the ALS algorithm, manual defibrillation, airway management during cardiopulmonary resuscitation (CPR), drugs and their delivery during CPR, and the treatment of peri-arrest arrhythmias.



Pediatric Basic Life Support

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Pediatric basic life support is support of the life without the use of equipment during which artificial ventilation and external cardiac massage are carried out. The possible use of a face mask is allowed. It provides adequate ventilation and circulation with the aim of supplying oxygen to all cells and tissues as well as protecting the brain from irreversible changes.

Conditions in which PBLS applies are:

- *Acute respiratory distress syndrome – ARDS due to airway obstruction, and lung diseases in which surfactant production is insufficient or there is lung edema or tumor;*
- *Acute cardiac arrest as a result of heart muscle affection or affection of the conduction system with heart arrhythmia;*
- *Accidental conditions Primary assessment of the life condition includes assessment of awareness. An uncreative child does not respond to the calls of his name or to a gentle touch, is not aware of the environment, is not oriented in space, time and towards persons.*



The next step includes assessment of airway patency (A), breathing (B), and circulation (C). If the child is in unconsciousness, and there is breathing, to set the child in a lateral position, monitor vital parameters and call emergency. When we have assessed the airway patency, we have to put the child on back position, rapid explore the mouth and do the head tilt and chin up. We have to estimate the breathing for the period of 10 second by watching (chest and abdominal movements), listening (breathing), and feeling (breaths). If there is no adequate breathing within 10 seconds, it is necessary to start resuscitation with ventilation with 5 initial breaths mouth to mouth or mouth to mouth and nose.

Absence of circulation is assessed by the absence of pulse in duration of *10 seconds*. Signs of lack of circulation are pallor, hypotonia, hyporeflexia. Circulation is assessed by palpation of peripheral arterial pulse. In older children and adults, the carotid artery is palpated. In infants, due to the short and thick neck, the carotid artery is difficult to palpate. Therefore, the brachial or femoral artery is palpated. For the best effect of the cardiac external massage child is placed in a supine position on a flat, firm surface, on the floor.

There are several techniques of cardiac massage depending on the age of the child. pressure should always be about 1/3 of the depth of the child's chest.

- Positions for external massage in newborns is 3:1, in infants 5:1 and in children 15:2 (100-120 compressions/min).
- Signs of successful resuscitation are palpable peripheral arterial pulse, improved perfusion with a change in skin color, improved muscle tone, and spontaneous respirations.

When to stop resuscitation?

Due to failure to return cardiorespiratory function within 20 to 30 minutes or due to irreversible changes to the brain and other vital organs. When not to start resuscitation? If the person is found dead (with death stiffness and death freckles) or if it is known that the cardiac arrest lasted more than 15 m.



Basic and Advanced Management of Airway

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Introduction: Patients with airway compromise need prompt recognition and correction using basic airway maneuvers/techniques and using medical equipment as airway adjuncts performing advanced airway management. Good airway management is an essential part of basic life support (BLS) and advanced life support (ALS). Responding with appropriate airway interventions will ensure hypoxic vital organ damage to be minimized or even better prevented.

Aims: This workshop considers the basic and advanced management of airway in the compromised patient.

Methods: Review of the normal airway, simple airway maneuvers, advanced airway management using supraglottic simple airway adjuncts as oropharyngeal and nasopharyngeal airway, laryngeal masks and advanced airway management using infraglottic techniques and adjuncts as laryngoscopy, intubation, suction, bag valve mask ventilation.

Learning outcomes: Recognizing patients with airway compromise; discuss potential causes of airway obstruction; determine any degree of airway obstruction and assess the patient by looking, listening and feeling.; respond to airway compromise with appropriate interventions; basic airway opening maneuvers of head tilt, chin lift and jaw thrust; selecting and introducing simple airway adjunct appropriately as supraglottic devices: oropharyngeal and nasopharyngeal airways; laryngeal device (LMA); recognizing the need for infraglottic techniques and assisted ventilation achieved by several methods including mouth-to- mouth or nose, mouth-to-mask, bag-valve device attached to facemask; laryngoscopy and intubation.

Keywords: airway management, basic, advanced, ventilation, airway adjuncts.



You Pose, We Expose – Workshop on Thoracic Imaging Basics and Future Perspectives

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The 20th century was a period of remarkable growth for medicine in general, as well as the field of radiology imaging, when it became a crucial component of the clinical medicine practice. It is expected that radiology will likely continue its exponential growth by interfacing with new realms such as information technology, molecular biology, and by having an essential role in general medical education, biomedical research, and noninvasive therapeutic interventions in the 21st century.

Clinical symptoms of patients with different pulmonary diseases tend to be quite similar and further diagnostic work-up includes various tests and most often some kind of imaging. Chest fluoroscopy and radiography were established clinical procedures, soon after the discovery of xrays by Roentgen and the standard chest radiograph remained the pillar of chest imaging for almost 80 years until the emerging of CT and MRI.

Thoracic radiology as radiology in general, has endured major changes and advances in both our understanding of the disease and the technology that we apply to its diagnosis. The breakthrough of CT technology from spiral scanning to multidetector and multislice scanning has revolutionized the application of CT. New perspectives have been necessary for conditions as pulmonary nodules follow-up to diagnosis of interstitial lung disease, based on the superior resolution of today's imaging devices.

This workshop is centered around educating young medical students the basics of thoracic radiology and provides a thorough analysis of the old and well established chest imaging modules as well as some recent advances in thoracic imaging technology, and discusses new methodologies that may be expected in thoracic radiology over the next decades.

The workshop is structured in two main components:

- *basic thoracic radiology lecture with interactive participation and questions, and*
- *interactive thoracic radiology case reporting.*



Participants will be divided into smaller groups, each able to participate and discuss their opinion on the individual cases in an interactive manner.

The curriculum covers almost all aspects of thoracic imaging: obstructive, infectious, interstitial lung disease, small and large airway diseases, mediastinal and vascular pathologies. The main imaging modalities of radiography, computed tomography and magnetic resonance imaging will be addressed within the workshop.

The workshop format is well chosen and provides a structured lecture and case-based approach to the various topics and all questions on a topic will be discussed from a radiological and clinical perspective. We can expect further radiology imaging development that will result not only in qualitative improvement of images but also in the capacity to provide both functional data and quantitative evaluation. Such technological advances of the imaging modules will provide more accurate diagnosis and better treatment and will add merit to the radiologic practice.

So, future and similar workshop and seminar formats will be essential in obtaining radiology imaging understanding and updated information on imaging technologies for medical students, young clinicians as well as refreshing the knowledge of senior clinicians and radiologist, so that we can all meet the challenges of the fast evolving medicine.



Who Can Donate Haematopoietic Stem Cells and Blood Marrow?

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A stem cell or bone marrow transplant is an important curative treatment for some patients with blood diseases like aplastic anemia, immunodeficiencies, and blood cancer such as leukaemia, lymphoma and myeloma.

In order for the transplanted cells to succeed in engraftment it is necessary the patient and the potential donor to be HLA matched. A brother or sister is most likely to be a match, since there are statistically a 1 in 4 chance for matching. This is called a matched related donor (MRD) transplant. For patients who do not find their matched donor within siblings or family, the potential donors are searched through donor registries. Donor registries are databases collecting and storing information from voluntary donors and exchanging information with transplant centers with a purpose to provide the best suitable donor for every patient in need of stem cell transplantation.

Macedonian Bone Marrow Donor Registry (MBMDR) was formed in 2010 and is the only accredited registry in Republic of North Macedonia. It is part of the World Marrow Donor Association, contributing with about 5500 local donors to the total number of about 40 million donors around the world. About 50 donors from different countries in the world have been found through MBMDR and have provided stem cells for treatment of Macedonian patients, and 3 donors from MBMDR have donated stem cell for treatment of foreign patients. The stem cells needed for treatment could be collected from the bloodstream or the bone marrow. Most healthy individuals aged 18 to 50 could be potential blood and marrow stem cell donors.

For some people, finding the right donor for a bone marrow transplant may be their only hope for a cure. The good news is that you don't have to actually donate bone marrow to find out if you're a match for someone in Macedonia or in the world. The process starts with a simple venipuncture or cheek swab to provide a sample of your DNA. If you are a basic match for a recipient based on that test, you'll have additional blood tests and physical examination. Potential donors can join MBMDR, be tested and add their names to list of people willing to donate bone marrow to anyone in need. Whether someone wants to become part of the bone marrow registry or donate to a relative, the donation process is the same.



Connect the Dots: How to Predict What Is Happening in the Brain, Spinal Cord and Nerves Through Our Bodies?

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The neurological examination is a comprehensive examination that provides an evaluation of the subject's nervous system. The human nervous system consists of the brain, the spinal cord and the nerves. A carefully performed neurological examination is an indispensable asset in the clinical practice. With its usage a skilled medical doctor can identify a lesion in the nervous system with frequently remarkable precision. It is an essential point in the clinical decision-making process.

A quite unique feature of the neurological examination is that each part of it entails a series of examination steps that test function.

Those steps include the following medical assessments:

- Mental status: level of consciousness, cognition and speech;
- Cranial nerve examination: I – XII;
- Motor examination: observation, inspection, palpation, muscle tone testing, functional testing, strength testing of individual muscle groups;
- Reflexes;
- Coordination and gait;
- Sensory examination.

Proper documentation of the results is necessary for comparing subsequent examinations of the patient for the purpose of following the changes in the patient's status.

Based on the patient's medical history, physical examination and neurological examination, a neurologist devotes expertise to deriving a collection of conclusions, including neurolocalization, whether further testing is required, and, if applicable, treatment. The central objective of the interactive activities is to enhance the participants' detailed skills engaged in medical reasoning within the field of neurology.



Modern Types of Treatment of Cervical Intraepithelial Neoplasia (CIN)

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Cervical intraepithelial neoplasia (CIN) is a premalignant squamous lesion of the uterine cervix diagnosed by cervical biopsy and histologic examination. The goal of management is to prevent possible progression to cancer while avoiding overtreatment since lesions can spontaneously regress. Cervical intraepithelial neoplasia (CIN) is a premalignant lesion of the uterine cervix that is classified as *low grade (CIN 1)* or *high grade (CIN 2,3)* based on the risk of progression to malignancy. In managing patients with CIN, the goal is to prevent possible progression to invasive cancer while avoiding overtreatment of lesions that are likely to regress.

Surveillance or observation is appropriate for some patients with low-risk lesions whereas treatment with an excisional or ablative procedure is recommended for patients with higher risk lesions.

Excisional treatments are referred to as cone biopsies or cervical conization and include *cold knife conization*, *loop electrosurgical excision procedure (LEEP, also called large loop excision of the transformation zone [LLETZ])* and *laser conization*.

Ablative treatments include *cryotherapy*, *CO2 laser ablation* and *thermal ablation (e.g., diathermy, cold coagulation)*.

Hysterectomy is unacceptable as a primary treatment for CIN but is an option for patients who are incompletely treated with excision or ablation or who have recurrent CIN. Cervical diagnostic excisional procedures (*also known as conization or cone biopsy*) refer to the excision of a cone-shaped portion of the cervix surrounding the endocervical canal and including the entire transformation zone.

Excisional procedures can be performed using a scalpel, electrosurgery (*i.e., loop electrosurgical excision procedure [LEEP], also called large loop excision of the transformation zone [LLETZ]*), or laser. While it is unclear if one technique is superior to another, LEEP has largely replaced laser because laser is expensive, technically difficult, and can cause harm to medical personnel. Laser is still occasionally utilized and, therefore, included in the following sections. Since squamous lesions typically arise at the transformation zone, the procedure usually enables the pathologist to study an intraepithelial or superficially invasive lesion in its entirety.



However, an *excisional procedure* does not always remove the entire transformation zone or lesion. Excision is less likely to be complete in certain situations, such as pregnancy, or when the transformation zone is large or high in the endocervical canal, or when the lesion extends onto the vaginal fornices or very deep into the cervical stroma.

Ablative procedures, which are usually done with cryosurgery or with the laser, are an alternative to an excisional procedure. However, no pathologic specimen is obtained since the cervical tissue is destroyed. These procedures are purely therapeutic and not of diagnostic value. They are appropriate for selected patients with previously well-characterized lesions histologically and colposcopically in whom invasive cancer has been excluded.

In recent times, excision, specifically with LEEP, has largely replaced the practice of cryotherapy or laser ablation. Ablative techniques include cryotherapy, CO2 laser, thermal ablation (cold coagulation), and diathermy. Unlike with excision, ablation provides no pathologic specimen as the cervical tissue is destroyed.

Therefore, these procedures are purely therapeutic and not of diagnostic value. They are appropriate only for select patients with previously well-characterized lesions histologically and colposcopically in whom invasive cancer has been excluded.



Blood Groups Typing

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Blood groups are determined by a class of antigens which are products of genes which are inherited independently from other genes. Those antigens are proteins in the structure of the erythrocyte membrane which are polymorphic and define a certain blood group. Most of the erythrocyte antigens are glycoproteins that have a certain oligosaccharide that determines its specificity (*e.g. ABO*) or an amino-acid sequence (*e.g. MN, Kell, Duffy, Kidd, Diego*).

There have been different suggestions about a proper classification system ever since the ABO blood group system was discovered by Karl Landsteiner. According to the *International Society of Blood Transfusion (ISBT)* there are officially *38 blood group systems* which contain *330 antigens*. There are 45 genes that are responsible for the production of these antigens through their polymorphism most commonly as a result of single nucleotide polymorphisms.

Routine blood typing is still primarily based on the principle of haemagglutination reaction between the erythrocyte antigens and specific antibodies also known as serological testing. There are several laboratory techniques like *the test tube technique* and *the column agglutination technique (CAT)* which is most commonly used and widely available because of its sensitivity and ability to be automatized and used in immunohematology testing among blood donors, pregnant women, newborns and patients in general. There are two types of ABO typing. One of them is known as *"erythrocyte typing"* where the ABO antigens are determined through the use of specific sera and the other is called *"reverse typing"* where the anti-A1 and anti-B antibodies are determined through the use of human A1 and B erythrocytes. If there is an A antigen on the erythrocyte surface there should be an anti-B antibody in the serum of the person and vice versa (*the Landsteiner rule*).

Investing in the molecular basis of the blood group polymorphisms has led to an expansion in molecular techniques for genotyping which contribute to solving clinical problems in different settings like: erythrocyte typing in patients who have received multiple transfusions, patients with auto-antibodies, typing of low and high-frequency antigens, determining weak antigens or antigens with diminished or altered expression, foetal typing in alloimmunized pregnant women and determination of zygosity in the father in order to assess the risk of



haemolytic disease of the foetus or newborn. RhD antigen variants can be determined through the use of genotyping (*weak D and/or partial D antigen*) which is of particular importance when it comes to prevention and management of alloimmunization to the D antigen in RhD negative women during pregnancy as well as in blood donors in order to find those with specific or rare phenotype





Score yourself for the day living

Workshop on assessment of Personal Insight Profile

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Personal insight is essential to assessing your understanding of yourself; for example, to know and understand your strengths and weaknesses, to have an insight into your learning style, work, how you deal with different situations. Personal insight is an important quality for any doctor, as it allows you to evaluate your skills and qualities, to have knowledge and insight into how you can improve your learning style and daily functioning.

Personal insight is also essential to your own understanding of how you deal with difficult situations, including stress and failure, as well as your own successes. The possibility of personal development is enhanced if you know your weaknesses, if you can overcome them by considering them as a challenge, so that you can think about your areas for development and improvement.

DiSC is a personal assessment tool used by more than one million people each year to help improve teamwork, communication and productivity in the workplace. Personal Insights Profile PIP is designed to help people achieve a higher level of success in professional work and in life. All successful people in history had one thing in common - they knew themselves well.

Successful people never underestimate their own capabilities.

They know their limitations and recognize their own weaknesses, develop plans that overcome their limitations and at the same time take advantage of their strengths.

In studying the similarities and differences in human behavior, Hippocrates recognized and classified four different behaviors. C. G. Jung speaks of four "types" based on four psychological functions:

thinking, feeling, feeling, and intuition. He would later divide the "types" into extroverts and introverts.

PIP uses a style analysis instrument DISC based on the work of Dr. William Moulton Marston.

1928. He published the book "The Emotions of Normal People" in which he presented the theory that we still use today. He observed human behavior and action along two axes depending on whether they



behave passively or actively depending on the personal perception of acceptance or non-acceptance of the environment. Marston identified what he called four “primary emotions” and associated behavioral responses, which today we know as Dominance (D), Influence (i), Steadiness (S), and Conscientiousness (C). Since Marston’s time, many instruments have been developed to measure these attributes.

DiSC instrument is an acronym that stands for the four main personality profiles. People with D personalities tend to be confident and place an emphasis on accomplishing bottom-line results. People with I personalities tend to be more open and place an emphasis on relationships and influencing or persuading others. People with S personalities tend to be dependable and place the emphasis on cooperation and sincerity. People with C personalities tend to place the emphasis on quality, accuracy, expertise, and competency.

Therefore, personal insight would lead to following processes for self-development: raise self-awareness, improve teamwork, make conflict more productive, develop stronger professional skills, manage more effectively, and personal development without judgment.



Journey to the truth: Medico-forensic aspect of murder

Case

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When the profession of forensic medicine is mentioned murder comes to mind first. Every murder case is a challenge and the process of solving such case goes through several steps, each crucial for the end result. The story always begins with a call from the public prosecutor, and a crime scene investigation, which consists of a static and dynamic part of the investigation.

Next in line comes the autopsy at the institute, followed by DNA, toxicological, microscopic, and crime analysis of biological traces. All of these results are being processed by the specialist doctors of forensic medicine, and a final conclusion is presented to the judiciary authorities.

We will present cases of serial killer murders, with its specifics, manner of death, cause of death, modus operandi of the killer, etc. The journey of solving the cases will be presented in a vivid interactive manner, with audience involvement.



Understanding The Importance of Correct Microbiological Sampling With Subsequent Sample Processing And Interpretation of The Obtained Results



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Introduction :

Considering the importance of correct microbiological diagnosis, the first and one of the most important steps is taking a sample for microbiological analysis.

This procedure usually is performed outside the microbiological laboratories and is not under the supervision of a doctor – specialist in medical microbiology.

Sampling errors that could arise from incorrect sample collection could contribute to both, false both false positive and false negative results.

However, it is often possible to detect these sampling errors during the interpretation of the results, when it necessary to reject such a sample as unsuitable and request a new one.

Objective:

Basic introduction for the entire process of microbiological analysis for making correct microbiological (bacteriological) diagnosis: from correct sample collection, through adequate sample processing, followed by correct results interpretation and making an accurate microbiological diagnosis.

Scenario:

The workshop will consist of three different stations each of them specific for preanalytical phase (sample collection), analytical phase (sample processing & inoculation of the samples with subsequent incubation) and postanalytical phase (results interpretation).

In the first station, several different samples, each of them taken in different



ways, will be demonstrated.

In the second station, there will be working sheets specifying sample processing procedures for each sample from the first station: inoculation technique, type of nutrient media, time and temperature for incubation, etc.

In the third station, agar plates that were inoculated with the samples from the first step, according to the procedures described in the second station, will be interpreted according to the presence of bacterial growth.

After a short introduction by the moderators, the students will be divided in several groups, and will be challenged to match the corresponding samples from the first station with the corresponding procedures and agar plates from the other two stations.

In the final step of the workshop, matched samples from the three different stations would be reviewed and discussed with the moderator for each corresponding student group.

Expected results and conclusion: Students would get a complete picture of the process of microbiological (bacteriological) diagnosis. The importance of proper sampling and how it can negatively affect the process of microbiological analysis will be emphasized.



Advanced Trauma Life Support (ATLS)

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The Advanced Trauma Life Support (ATLS) Program was developed to teach doctors a safe, reliable method to assess and initially manage the trauma patient. ATLS was developed by the American College of Surgeons (ACS) following the tragic 1976 event of an orthopedic surgeon piloting his plane, who crashed into a Nebraska cornfield with his family, causing severe injuries to his 3 children and the death of his wife – a story retold by himself 30 years later, insufficiency in the system was noted by the care received at the primary care facility. The ATLS principles represents an organized approach for evaluation and management of seriously injured patients.

The concept is simple, and based on the mnemonic "ABCDE" order of which priority takes place in management of the injured patient:

- A- Airway and cervical spine protection;
- B- Breathing;
- C- Circulation;
- D- Disability
- E- Exposure/Environment.

The emphasis is on the critical "first hour" of care, focusing on initial assessment, lifesaving intervention, reevaluation, stabilization, and, when necessary, transfer to a trauma center.

Airway and cervical spine protection (A)

- *upper airway (above vocal cords) with chin lift/jaw thrust, oral airway, nasopharyngeal airway and laryngeal mask airway
- *lower airway managed definitively with cuffed tube in the trachea
- *intubation is indicated for airway protection

Breathing (B)

- *ensure adequate oxygenation (pulse oximetry) and ventilation
- *provide supplemental oxygen
- *Assess breath sounds, chest percussion, chest wall excursion and jugular venous distention
- *re-expand alveolar volume

Circulation (C)

- *assess for and stop external hemorrhage
- *assess for tissue perfusion



- *gain vascular access
- *administer initial volume
- *assess for response
- *consider and intervene to stop hidden sources of bleeding
- *consider non-hemorrhagic sources of shock

Disability (D)

- *brief neurological exam
- *maintain airway, breathing, and circulation to prevent secondary brain injury
- *temporize for evidence of increased intracranial pressure

Exposure/Environment (E)

- *assess temperature
- *remove all clothing to facilitate access and examination
- *maintain normothermia/ prevent hypothermia : warm room, warm fluids, warm blankets



Abdominal Ultrasound

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The purpose of abdominal ultrasound (US), which is performed by clinicians at bedside, is increasingly being used to evaluate clinical manifestations, to facilitate accurate diagnoses, and to assist procedures in patients with abdominal pains.

An US is a noninvasive procedure used to assess the organs and structures within the abdomen.

This includes the liver, gallbladder, pancreas, bile ducts, spleen, and abdominal aorta. Point-of US is also considered in order to detect abdominal and pelvic lesions. It is particularly useful for the detection of gallstones and the diagnosis of acute cholecystitis. It may also be useful for the diagnoses of digestive tract diseases such as appendicitis, small bowel obstruction, and gastrointestinal perforation. Additionally, point-of-care US can be a modality for assisting procedures. US guidance enables visualization of the needle insertion site to perform paracentesis safely. Also biopsy of focal liver changes under US control remains the gold standard for diagnosis.

Ultrasound technology allows quick visualization of the abdominal organs and structures from outside the body. Ultrasound uses a transducer that sends out ultrasound waves at a frequency too high to be heard. The ultrasound transducer is placed on the skin, and the ultrasound waves move through the body to the organs and structures within. The sound waves bounce off the organs like an echo and return to the transducer. The transducer processes the reflected waves, which are then converted by a computer into an image of the organs or tissues being examined.



Neonatal Resuscitation

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Neonatal resuscitation is set of interventions at the time of birth to support the establishment of breathing and circulation in the delivery room. 5-10% of all newborns with apnea and bradycardia require basic newborn resuscitation with positive pressure ventilation - PPV with a bag-mask and tactile stimulation.

Basic neonatal resuscitation should be done in a delivery room under a warmer in the first minute of life. There are 5 standard procedures: stimulation with drying the newborn, clear the airway with suction, stimulation the newborn, clamp the cord in first 30-60 seconds and positive pressure ventilation with bag-mask (60 and oxygen if a newborn has respiratory failure (apnea or gasping). After 15 seconds of effective PPV a heart rate assessment is improving (heart rate is increasing over 100 bpm , than PPV is interrupted. But, if respiratory failure is deteriorated, PPV it has to continue, until heart rate is improving and a newborn is transfer to neonatal intensive care unit (NICU).

Advanced resuscitation procedures, endotracheal intubation, chest compressions, administration of medications, should be performed when general condition of newborn does not improved (at least 30 seconds of PPV heart rate remains less than 60 bpm).

Endotracheal intubation is an invasive procedure and offers possibility of stabilization of respiratory failure. The newborn should be in "sniffing" position aligns the trachea for optimal viewing, and placement of endotracheal tube.

Chest compressions (pressure to the lower third of the sternum, about 1/3 of the depth of the child's chest) are indicated if the newborn heart rate remains less than 60 bpm after at least 30 seconds of PPV.

If the heart rate remains below 60 bpm despite effective ventilation and chest compressions, administration of medication is necessary. Adrenaline or Epinephrine is not indicated before adequate ventilation has been established and chest compressions have been initiated. After the dose of epinephrine is given, continue PPV with 100% oxygen and coordinated chest compressions.



The clinical signs of hypovolemic shock (lower heart rate, tachypnea, pale, weak pulse) required re-expansion of newborn`s intravascular volume with volume-expandes. Circulatory status; increase heart rate and blood pressure, pulses become stronger will improve in response to effective ventilation, chest compressions, and administration of medications. If the heart rate is absent, without any progress in general conditions for minimum 10 minutes of neonatal resuscitation, than is appropriate to discontinue resuscitative efforts.



Invasive Procedures In Prenatal Diagnostics

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Prenatal diagnosis is essential in women with high risk for aneuploidy. These risks include age over 40 years old, abnormal multiple screen markers, and previous child or pregnancy with aneuploidy. The typical prenatal testing algorithm should be offered to all pregnant patients. Women with increased risk should be referred to further genetic counseling with testing options.

The most used invasive procedures include: amniocentesis, chorionic villus sampling, cordocentesis, fetal tissue sampling, and fetoscopy. Invasive procedures that use QF-PCR tests detect common aneuploidies like Down syndrome, Trisomy 18, Trisomy 13 and sex chromosome aneuploidies. In positive results further chromosomal analyses and microarray tests should be performed. In one study that was carried out at the University Clinic for Gynecology and Obstetrics, in Skopje N. Macedonia, from the 582 amniocentesis that were performed, 18 were positive karyotypes (3%), and average maternal age at diagnosis was 17+3 years old. In recent years, the implementation of first semester screening significantly improved the probability of confirming aneuploidy in the affected fetuses in early pregnancy.

The first trimester policy of prenatal care produced redistribution of invasive procedures for prenatal diagnosis, as well as, reduction of unnecessary invasive procedures, thus decreasing the percentage of fetal loss, and earlier diagnosis of fetal aneuploidies. The new laboratory techniques include: fluorescent in situ hybridization (FISH), amplification of polymorphic chromosome-specific markers by polymerase chain reaction (PCR).

Most laboratories offer a rapid test (PCR or FISH) to detect trisomy 21, 18, 13 and sex chromosome aneuploidies, as well as tissue culture to provide a full karyotype. Array comparative genomic hybridization is offered in cases of multiple congenital abnormalities at ultrasound or for clinical diagnosis.

The advantages of array comparative genomic hybridization versus chromosomal microarray analysis is that array comparative genomic hybridization allows detection of smaller pathogenic chromosomal variants that are undetectable using standard cytogenetic analyses (G-band karyotyping). The disadvantages of array comparative genomic hybridization is that this procedure does not allow detection of balanced chromosomal rearrangements like triploidy and some instances of mosaicism. The biggest challenge presented by array comparative genomic hybridization is the



detection of chromosomal variants of unknown clinical significance.

From all presented we can conclude that invasive prenatal diagnostic procedures are gold standard in cases with positive prenatal tests or history of previous pregnancy or child with aneuploidy; the array comparative genomic hybridization is not a substitute for conventional karyotyping; array comparative genomic hybridization should be used for specific diagnostic purposes in selected pregnancies and not for general screening in all pregnancies; non-invasive tests should be offered in low-risk pregnancies or wherever possible; genetic counseling should be mandatory before and after invasive or non-invasive prenatal diagnostic procedures.



Start small and Aim big - Basic Surgical Suture Techniques

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Surgical suture training is recognized as a vital component of medical education.

Emphasis on basic surgical and procedural training is often overshadowed by the preclinical curriculum, which is heavily focused on generalized skills and knowledge, such as taking thorough histories and performing appropriate physical exams. Therefore this intensive one-day surgical-skill training course would improve surgical skills and increase interest in surgery among medical students.

For introduction, students will attend short lecture in order to gain knowledge about basics of sutures and suture materials. Then by hands-on-training every participant will learn the use of the main surgical instruments and their proper handling.

On completion of this one-day course, participants should be able to:

- Demonstrate safe practice when gowning and gloving
- Handle commonly used surgical instruments in a safe and effective manner
- Create secure " reef " and " surgeon " knots
- Pick up and safely drive a needle through tissue with accurate bite placement
- Perform an interrupted suture to close a wound

Lastly in order of mention but not of importance, they will learn about wound care, dressing the wound and suture removal.



Ultrasound is The Stethoscope of The Future E-Fast Protocol

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Traumatic injury is the leading cause of death among individuals younger than 45 years old, Eighty percent of traumatic injury is blunt with the majority of deaths secondary to hypovolemic shock . In fact, intraperitoneal bleeds occur in 12% of blunt trauma ; therefore, it is essential to identify trauma quickly. The optimal test should be rapid, accurate, and non-invasive. Historically, providers performed diagnostic peritoneal lavage (DPL) to detect

hemoperitoneum. While extremely sensitive (96% to 99%) and specific (98%), DPL is an invasive procedure with a complication rate of 1% .CT remains the gold standard for diagnosing intra-abdominal injuries detecting as little as 100 cc of intraperitoneal fluid. However, time delays and transportation out of the emergency department confound the evaluation of hemodynamically unstable patients.

The implementation of point of care ultrasound has significantly impacted the evaluation and treatment of patients . Ultrasound has considerable advantages, including its bedside availability, ease of use, and reproducibility. Furthermore, it is non-invasive, employs no radiation or contrast agents, and is inexpensive. The use of ultrasound to detect intraperitoneal fluid was first described in Europe during the 1970s. However, widespread adoption in the United States did not occur until the 1990s. The Focused Assessment with Sonography in Trauma (FAST) is an ultrasound protocol developed to assess for hemoperitoneum and hemopericardium. Numerous studies have demonstrated sensitivities between 85% to 96% and specificities exceeding 98% . In the subset of hypotensive trauma patients, the sensitivity of the FAST exam approaches 100%. Experienced providers perform the FAST exam in less than 5 minutes , and its use decreases time to surgical intervention, patient length of stay, and rates of CT and DPL. Presently, more than 96% of level 1 trauma centers incorporate FAST into their trauma algorithms as does Advanced Trauma Life Support (ATLS) .

Recently, many institutions have introduced the Extended FAST (eFAST) protocol into their trauma algorithms. The eFAST examines each hemithorax for the presence of hemothoraces and pneumothoraces



Objectives:

- Explain the limitations of a Focused Assessment with Sonography for Trauma (FAST) exam.
- Summarize the indications for a Focused Assessment with Sonography for Trauma (FAST) exam.
- Explain how to perform a Focused Assessment with Sonography for Trauma (FAST) exam.

- Explain the importance of collaboration and communication among the interprofessional team to ensure appropriate selection of candidates for Focused Assessment with Sonography for Trauma (FAST) to enhance the management of trauma patients and improve outcomes.

Indications for the eFAST exams include:

- Blunt and/or penetrating abdominal and/or thoracic trauma
- Undifferentiated shock and/or hypotension (as part of the Rapid Ultrasound for Shock and Hypotension (RUSH) exam).

Clinical Significance

Ultrasound has revolutionized the care of traumatic injuries. Numerous studies, albeit mostly observational, have demonstrated that the eFAST protocol is a clinically significant adjunct in the evaluation and treatment of trauma patients. The EAST (Eastern Association for the Surgery of Trauma) guidelines, Western Trauma Association, and ATLS recommend the eFAST as the standard of care in trauma resuscitation protocols. The eFAST has been shown to decrease time to operative intervention; patient length of stay; cost; and the rates of complications, CTs, and DPLs performed. As with any imaging modality though, recognize and understand its limitations.



The importance of being human

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Medical education - in part - is in the business of internalizing values and helping medical students bridge their personal identities with their professional ones. During this process, the pursuit of skills and medical knowledge sometimes overshadows the humane aspect and the humanism of the profession. With the amount of medical knowledge doubling every 70 days in 2020, prioritizing the medical skills over the social skills takes precedence. While this process is in part to be expected, the question remains - how should medical students balance humanism and science while quenching their thirst and pursuit of knowledge?

This session will talk about the attributes that make a good physician great, and ways to bind everyday medical practice with empathy, human dignity, and medical professionalism. Often empathy and medical professionalism are only fleeting micro-moments in medical curricula. In a reality where medical students and residents are unable to visualize learning outcomes from the hidden curriculum, every skill - soft skill or otherwise - needs to be deliberately taught. Therefore, bringing these issues to the forefront and discussing them with the future of the medical workforce is the main goal of this talk, particularly pertaining to the reputation of the profession and its community impact.



Osteoarticular system examination

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Objectives:

- How to perform basic tests of osteoarticular mobility of the shoulder, elbow, hip, knee and the ankle joint .
- Perfect the technique of examination
- Incorporate in everyday practice

Practice:

* Examination of the shoulder

- Shoulder anatomy
- Shoulder range of motion: Compare active and passive motion, both sides normal values should be considered relative to contralateral side as patient flexibility may vary
- Six planes of motion should be examined and documented
 - forward elevation- 180° considered normal
 - abduction-performed with the scapula stabilized by examiner's hand
 - normal is 90 with scapula stabilized
 - external rotation at 90 degrees abduction
 - external rotation at side -80° considered normal
 - internal rotation to vertebral height -T4-T8 considered normal
 - internal rotation at 90 degrees abduction

* Examination of the elbow

- Observe and palpate both elbows and over the olecranon process (synovial thickening or effusion both in the joint itself and in the area of the olecranon bursa).
- Ask the patient to extend both elbows fully and to flex them fully. The position of full extension is designated as 0 degrees, and flexion should be performed well to 160 degrees in the normal state.
- The range of motion in the radiohumeral joints is then tested by asking the patient to pronate and supinate both hands fully.



* Examination of the hip joint

- The hip is a ball-and-socket joint and consequently capable of complex motions of flexion, extension, abduction, adduction, and rotation.
- Hyperextension of the hip
- Flexion contracture

* Examination of the knee joint

- Look for atrophy of the quadriceps muscles and observe the contour of the knees. In palpating a knee that appears swollen, attempt to identify the structures producing the enlargement.
- Genu valgum
- Genu varum
- Flexion contracture
- Stability of the knee (Lateral and medial stability)
- Integrity of the cruciate ligaments - Drawer sign
- Fluid or effusion in the knee

* Examination of the ankle joint

- Palpate for tenderness, swelling, effusion, and crepitus on range of motion.
- Dorsiflexion
- Plantarflexion
- Invert rotation (supinate)
- Evert rotation (pronate)



Diagnostic Procedures and Microsurgery in Ophthalmology

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Introduction:

Ophthalmology as a diagnostic and surgical branch of medicine uses many modern technological tools and micro-surgical procedures in solving eye diseases.

Motive:

To practically show some of the diagnostic procedures used in modern ophthalmology such as: biomicroscopy, ophthalmoscopy, native fundus photography, anterior and posterior segment optical coherence tomography, supplemented with basic microsurgical techniques and skills.

Event:

After the students are introduced to the process through basic concepts, they will be divided into several groups and attend several workshops. In the first workshop, a native fundus photo of one of the participants will be taken and it will be analyzed by the students under the mentorship of the moderator. The discussion will be supplemented with fundus photographs of patients with specific ophthalmic entities.

In the second workshop, an optical coherence tomography of the anterior and posterior segment of the eye of one of the participants will be performed and a brief analysis of the structures and possible changes that are monitored through these two diagnostic tools will be performed.

In the third workshop, an operating biomicroscope will be shown and with the help of the moderators, the students will have the opportunity to make microsurgical sutures.

Through these workshops, the goal is to achieve practical skills in the diagnostic process and micro-surgical treatment with patients affected by ophthalmic diseases.



Rare Forms of Acne

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Acne vulgaris is a skin disease that is generally neither rare nor difficult to diagnose; acne is the most common of skin diseases, considered to be easily recognized and treated. It is an inflammatory disease of the pilosebaceous unit, and it affects body areas characterized by an increased density of pilosebaceous glands, such as the face, chest, and back. 1 Acne vulgaris is classified according to severity (mild, moderate, or severe) and according to the lesions that predominate in a given patient (ie, comedonal [comedones predominate], papulopustular [papules and pustules predominate], nodular, or conglobate acne [acne conglobate]).

Some types of acne, however, are challenging to diagnose or to successfully treat, including difficult forms of acne vulgaris (e.g., acne conglobata and relapsing or nonresponding acne), as well as the more rare variants of acne (e.g., acne fulminans) and acne in the context of complex syndromes, such as the synovitis, acne, pustulosis, hyperostosis, osteitis (SAPHO) syndrome; the pyogenic arthritis, pyoderma gangrenosum, acne (PAPA) syndrome; the pyoderma gangrenosum, acne, and suppurative hidradenitis (PASH) syndrome; or congenital adrenal hyperplasia (CAH).

The treatment of this rare forms of acne is often difficult as guidelines do not exist. The glucocorticoids and disease-modifying antirheumatic drugs (DMARDs) have been reported to be effective. Biologics and biologic that acts Janus kinase have achieved good results in individual cases.



Top Ten Principles that Make Geriatric Medicine Different from Other Medical Specialties

Author: Prof. Dr. Richard M. Allman

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Introduction.

The population of Macedonia is getting older. The median age increased from 60.6 years in 1960 to 75.7 years in 2022. The percentage of adults aged 65 years and over is currently 15 percent and is expected to increase to 25.7 percent in the next 30 years. The special health care needs of this growing population provide an opportunity to adopt principles of Geriatric Medicine that can improve care outcomes for older adults and patients of all ages who face challenges of multiple, chronic conditions, severe, or life-threatening illnesses. Providing educational and training opportunities in environments that provide the infrastructure required for the application of these principles will improve the learning environment for physicians and other health care professionals. The purpose of this presentation is to enable learners to understand the potential for how expertise in the application of these Geriatric Medicine principles can improve care for the most complicated patients and enhance health care education.

Methods.

Ten principles of Geriatric Medicine will be introduced and discussed with the audience to define how their application would be relevant to patient care in Macedonia. The audience will have the opportunity to give examples of how the application of these principles could help improve care for patients.

Learning Outcomes.

Learners will be aware of the top ten principles of Geriatric Medicine. They will be able to give at least 3 examples of how the application of these principles can improve care for older adults and other patients with complex illnesses. They will begin to understand the importance of enhanced educational and training opportunities in Geriatric Medicine and will develop ideas about how healthcare systems can innovate in ways that will make the application of these principles more feasible.



It's a beautiful day to save lives, donate blood so someone survives

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Blood donation is a vital part of worldwide healthcare. It relates to blood transfusion as a life-sustaining and life-saving procedure as well as a form of therapeutic phlebotomy as a primary medical intervention.

Given the importance of blood for life, blood transfusions help save millions of lives each year, as it increases the life expectancy of patients with deadly diseases, allows medical procedures and surgeries and is essential for emergency medical care.

The main indications for blood donation for transfusion include anemia and acute blood loss. Low hemoglobin is the number one cause for donor deferral, accounting for deferral in as many as one out of 10 attempted blood donations. The causes of low hemoglobin may vary, but one of the most common is low dietary iron consumption.

The amount of iron-depleted by a single donation also varies from person to person and between males and females, and the ability to replenish iron stores also differs between individuals.

However, many countries do not have a sufficient supply of safe blood. This can only be achieved through the willingness of unpaid altruistic donors. Having a blood transfusion service with safe and sufficient products is fundamental for every health system.



Laparoscopy In Gynecology

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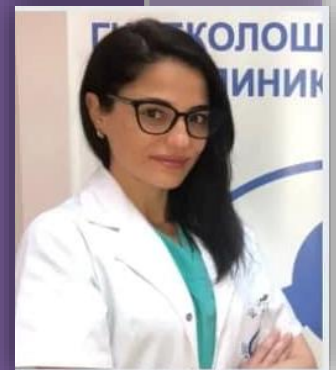
The introduction of endoscopy into surgical practice is one of the biggest success stories in the history of medicine.

The credit for the first true laparoscopy on a human goes to Hans Christian Jacobaeus from Stockholm, who coined the term "laparoscopy" and in 1910 described his technique for the inspection of the human peritoneal, thoracic, and pericardial cavities. Only four decades later, gynecological laparoscopy was introduced, developed, and used routinely by European pioneers, such as Raoul Palmer and Hans Frangenheim.

Initially, laparoscopy was used for diagnosis and simple therapeutic procedures such as tubal ligation and fenestration of benign ovarian cysts but gradually became more sophisticated. Developments in the techniques of operative laparoscopy have had a major impact on the specialty of gynecological surgery.

At present, minimally invasive surgery is the standard of care for the treatment of many gynecological conditions and the most frequently performed gynecological surgical approach. The proven benefits of minimally invasive surgery, such as decreased blood loss, decreased postoperative pain, decreased perioperative complications, shorter hospitalization, and faster recovery when compared with laparotomy, are driving the rapid introduction and dissemination of novel technologies and the increasing ability to perform even the most complex procedures less invasively.

That's why the new generations of doctors should be acquainted and skilled in these new endoscopic techniques.



Doctor Detective: Clinical Reasoning 101

Author: Dr. Timothy P.Gaul

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Introduction

To be sure, the practice of medicine is an unending series of challenges. As medical education proceeds, one of the biggest is translating 'book knowledge' into clinical expertise.

In this presentation, Dr. Gaul will demonstrate concrete steps students can take now to advance their clinical reasoning (CR) skills, skills critical to formulating a differential diagnosis and an accurate therapeutic regimen for patients optimal outcomes.

Methods

The presentation will focus on 4 patient case studies. After a review of basic CR skills, you'll be divided into 'diagnosing teams' whose goal is to diagnose the disease in each of the cases based on the information Dr. Gaul provides. This will be a true 'out of the box' session where group interaction reigns and learning is truly enjoyable.

Learning Outcomes

It's hoped the friendly competition will facilitate team-based assessment and encourage further study of the emerging science of diagnostic reasoning. In addition, the session will help embed the principles of CR you'll need to make the most of your time in medical university.

Dr. Timothy Gaul is board-certified in Family Medicine and Addiction Medicine. He is a Clinical Assistant Professor of Family Medicine at the University of Pittsburgh School of Medicine. Dr. Gaul has served as faculty, medical administrator and clinician over his career and his passion is mentoring students as the journey throughout their training and early careers.



Practical Aspects of the Operating Room (all you ever wanted to know about the OR, but were afraid to ask)

Author: Dr. David Larson

Clinical Assistant Professor of Family Medicine at the University of Pittsburgh School of Medicine, faculty, medical administrator and clinician, Board-certified in Family Medicine and Addiction Medicine.

The operating room can be an intimidating experience for students and physicians, alike. This presentation is offered as a primer for anyone who thinks they may be asked to assist, or even have a presence, in the operating room. Information shared would be of interest to medical students, physicians or others who may find themselves in the operating room in their medical education.

Points to be addressed in the presentation:

- Operating Room Environment
- Operating Room Team
- Electrosurgery
- Communicating in the OR
- Positioning the patient
- ROLE OF THE ASSISTANT SURGEON
- Drains, dressings, and suture removal
- Injection of local anesthesia
- Random thoughts from a mature surgeon



