

CONTENTS

Plastic Surgery, Maxillofacial Surgery – Marek Łuciuk, PhD MD DMD.....	4
Hepatology – Professor Bożena Walewska-Zielecka, PhD MD.....	8
Clinical Dietetics – Wanda Baltaza, PhD.....	11
Cardiology – Professor Marek Kuch, PhD MD (Harvard Medical School).....	14
Cardiac Surgery – Professor Michał Zembala, MBA PhD MD (Harvard Medical School).....	17
Molecular Biology – Łukasz Sobkowiak, PhD (Stanford University).....	20
Abdominal Surgery, Transplantology, Proctology – Piotr Zelga, PhD MD (Harvard Medical School & Massachusetts General Hospital, Cambridge).....	25

A Message from the Editor-in-Chief

Dear Readers,

Welcome to the latest issue of «M for Medics,» where our mission is to connect and collaborate with medical professionals across United States of America, UK, Poland, Switzerland, Israel, Singapore and Japan. We are dedicated to bridging the gap between advanced medical practices and healthcare services, fostering a global community of medical excellence.

In this issue, we bring you exclusive interviews with leading experts from various fields of medicine. By uniting the Top Doctors and innovative minds promoting MedTech, we aim to create a vibrant network of collaboration and knowledge exchange. Through our extensive network and events, we facilitate interactions that drive growth, innovation, and shared learning. Each issue features interviews with esteemed doctors, including renowned Harvard Medical School Alumni, showcasing their expertise and contributions to the field.

At «M for Medics,» we believe in the power of connection. Our platform allows doctors to network, share their knowledge, and support each other. By providing a space for these interactions, we hope to inspire collaboration that transcends borders and enhances patient care globally.

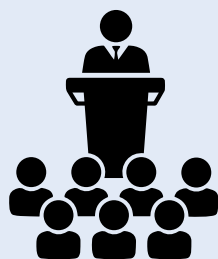
We are also passionate about promoting the most innovative medical technologies through our #MedTechPremium initiative, highlighting advancements that have the potential to transform healthcare and improve patient outcomes.

«M for Medics» is available as a PDF, ensuring our cutting-edge content is accessible to medical professionals worldwide. As you read through this issue, I hope you find inspiration in the stories and innovations featured. Together, we can shape the future of healthcare.

Thank you for joining us on this journey.
Warm regards,
M.



Allow me to introduce myself: I am Magdalena Kucharska, your Editor-in-Chief. I hold a master's degree in Healthcare Management from the Medical University of Warsaw and have completed the HMX Fundamentals course at Harvard Medical School, obtaining certificates in pharmacology and immunology. Additionally, I have pursued studies on Artificial Intelligence in Healthcare at Stanford University School of Medicine. I am passionate about psychology and understanding people's mindsets. I have a great sense of humor and love engaging conversations.



OUR MISSION IS TO BUILD A COMMUNITY WHERE DOCTORS CAN CONNECT, SHARE KNOWLEDGE, GROW TOGETHER, AND SUPPORT EACH OTHER. THEY CAN COLLABORATE ON PROJECTS, ORGANIZE CONFERENCES, AND ENGAGE IN RESEARCH, LEADING TO MEDICAL BREAKTHROUGHS.

**FOLLOW US ON INSTAGRAM @MFORMEDICS
OR SEND US AN EMAIL AT MFORMEDICS@GMAIL.COM.**

FACIAL PLASTIC SURGERY, MAXILLOFACIAL SURGERY – Marek Łuciuk MD, DMD, PHD

My name is Marek Łuciuk (MD, DMD, PhD). My main professional interests include facial plastic surgery, maxillofacial surgery, orthognathic surgery, skin surgery, and aesthetic medicine. I specialize in procedures such as full nose (rhinoplasty) and septum (septoplasty) correction, face and neck lifts, temporal, eyebrow, and forehead lifts, upper and lower eyelid correction (blepharoplasty), correction of protruding ears (otoplasty), facial implants, upper lip lifts, dental and orthognathic surgery, and facial traumatology. Privately, I am passionate about martial arts, dancing and water sports.

1. Please share your professional passion and tell us how your education has contributed to its development.

My passion lies in facial and neck surgery. Facial plastic surgery, cranio-maxillofacial and dental surgery, skin and soft tissue surgery of the face and neck, skin surgery, oral surgery, and aesthetic medicine in these areas form an extremely important and complementary combination, allowing for a comprehensive, holistic approach to all facial and neck issues faced by our patients.

Since childhood, I knew I wanted to become a surgeon. I graduated from the Faculty of Medicine and Dentistry with both degrees in Medicine and Dentistry. Subsequently, I specialized in maxillofacial surgery and got a Ph.D. in medicine, specializing in otolaryngology at the Department and Clinic of Otolaryngology, Head and Neck Surgery in Wrocław. I also completed postgraduate studies in Medical Cosmetology with Aesthetic Medicine at the Silesian Medical School in Katowice, and another postgraduate program in Medical Law at the Faculty of Law of the University of Wrocław.

For many years, I have been an active member of the European Academy of Facial Plastic Surgery (EAFPS) and the Asian Pacific Anti-Aging



Society. I continuously enhance my qualifications by participating in internships, congresses, workshops, and training sessions in various countries both within the European Union and other continents. I have completed internships in Portugal, the USA, Italy, Germany, Belgium, Spain, France and Korea, each time receiving the highest references. My practical preparation enables me to approach facial and neck surgery comprehensively from the very beginning, considering both the bone structure of the facial skull and the soft tissues of the face, in terms of both surgical correction and aesthetic medicine.

2. What are the latest trends in facial plastic surgery?

The latest trends in facial plastic surgery encompass aesthetic, psychological, and functional aspects, enhancing the quality of life for patients on multiple levels. The current approach is highly individualized, offering a range of options from minimally invasive to

more extensive procedures. Today, there is a strong emphasis on achieving natural-looking results. The goals include improving facial proportions, reducing asymmetry, reversing the effects of aging, and restoring or enhancing functions such as breathing, chewing, vision, and speech. The aim is to enhance appearance and boost self-confidence without creating an artificial look or drawing attention to negative features, while maintaining a natural effect. Trends focus on halting and reversing the aging process and improving facial proportions while preserving a natural appearance. It is crucial that the signs of procedures are as inconspicuous as possible. The most popular procedures currently are nose reduction and upper eyelid correction, face and necklifting.

3. How exactly does the septoplasty procedure work and what are the main stages of this procedure?

Septoplasty is a procedure to correct the septum of the nose. The nasal septum is composed of cartilage and bony parts, and curvatures can be congenital or acquired. The procedure involves correcting these curvatures in various parts of the septum to achieve proper, unobstructed breathing.

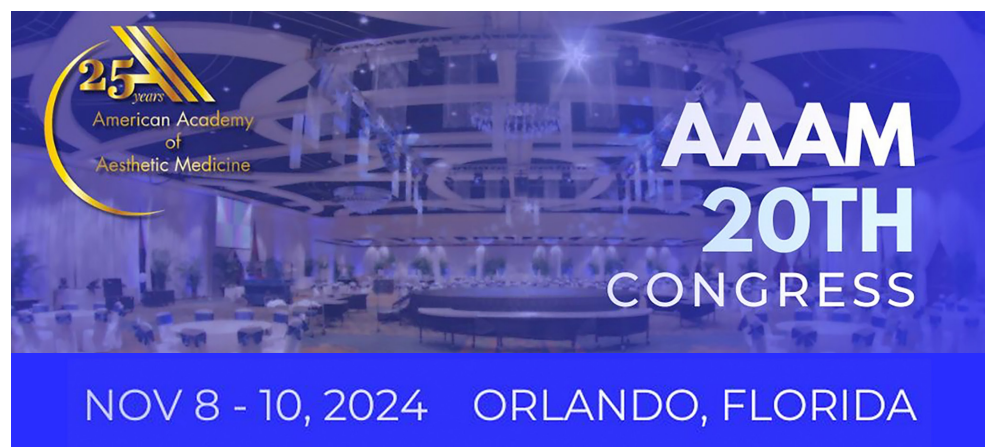
In some complicated cases (such as major injuries, previous procedures, or other complications), reconstruction may require cartilage taken from other parts of the body, such as the rib. This procedure can be performed on its own or as part of a full rhinoplasty or other facial plastic surgery.

The main goal of septoplasty is not to achieve a fully straight and symmetrical septum by correcting all present curvatures. Instead, the objective is to ensure adequate nasal patency and improve respiratory function while minimizing the risk of complications both functionally and aesthetically. Depending on the severity of the curvature and any prior injuries or surgeries, the procedure can take, on average, from 30 to 60 minutes. In extremely

complicated cases, it may take several hours. The procedure is most often performed under general anesthesia for the comfort of both the patient and the surgeon. After the procedure, silicone stabilizers with tubes are usually placed in the nasal passages on both sides of the septum to allow breathing. In some hospitals, setons or tampons are used, though they significantly reduce patient comfort. Septoplasty can often be combined with conchoplasty, a surgical correction of the inferior nasal turbinates, which also significantly impacts breathing. Conchoplasty aims to reduce, shrink, or reposition the inferior nasal turbinates, improving airflow and nasal breathing.

4. What does rhinoplasty look like?

Rhinoplasty is a surgical procedure to correct the external nose. It is one of the most popular and frequently performed facial plastic surgeries. The aim is to improve both the aesthetics (shape, size, proportions) and function of the nose. The procedure is usually performed under general anesthesia, using either an open technique (incisions on the nasal column) or a closed technique (incisions inside the nose). It may involve correcting the bony and/or cartilage parts of the nose. Aesthetic and functional defects being corrected can be congenital or acquired due to injuries or previous surgeries. Before surgery, consultations and tests are necessary to assess the initial condition, the patient's expectations, possibilities, limitations, and to determine the risk and type of possible complications. It is important for the patient to have realistic expectations, as each case is individual and results may vary. After the operation, the patient typically stays in the clinic for one night. Stitches are removed after



6-7 days, and the hard dressing is removed after about 10 days. Rhinoplasty is most often performed on adult patients, and in special medical cases, such as injuries, it may also be performed on younger individuals.

Usually, the main goals are to reduce the nose, reduce the hump, raise and narrow the tip, reduce the protrusion.

5. What is the most effective method to correct protruding ears?

The ear correction procedure is called otoplasty. One common defect addressed by this procedure is the correction of protruding external auricles. This involves removing an appropriate amount of skin behind the ear, reshaping and modeling the cartilage, and securing it with carefully selected sutures. Otoplasty can be performed on both adults and children from around 7 years of age, correcting one or both ears as needed. The procedure typically lasts about one hour and is usually performed under local anesthesia. After the surgery, the patient wears a pressure dressing and then a special band for at least four weeks.

Two of the most popular techniques used in ear correction are the Davis method and the Mustardé technique. The Davis method involves precisely modeling the ear cartilage to achieve a natural appearance of the auricle. In the Mustardé technique, special mattress sutures are used to shape the antihelix. These techniques help achieve an aesthetic and natural shape of the auricle while reducing its protrusion with minimal risk of complications.

6. What is orthognathic surgery?

Orthognathic surgery is a branch of maxillofacial surgery usually combined with orthodontic treatment. This surgical procedure corrects severe defects and maxillofacial deformities associated with malocclusion that cannot be corrected by orthodontics alone. The surgery improves facial symmetry, proportions, aesthetics, and functions such as swallowing, chewing, speech, and breathing. Before the operation, an orthodontist prepares the patient by correcting the position of the teeth. Detailed examinations using specialized devices such as CT scanners and face scanners are then performed to

capture intraoral relations of the jaws. The surgeon conducts a computer analysis and meticulously plans the new positions of the jaw and mandible. These computer-determined positions are transferred to the operating room using special templates printed by 3D printers. The procedure is performed under general anesthesia with access through the oral cavity, avoiding visible scars. During the operation, an osteotomy is performed, which involves cutting the bone within the upper jaw (maxilla) or lower jaw (mandible), repositioning the fragments and set them in the new position using the previously prepared templates. The repositioned bone fragments are then stabilized using titanium plates and screws through a process called osteosynthesis.

7. What modern medical technologies (MedTech) are used during this surgery?

Modern medical technologies play a crucial role in orthognathic surgery.

Advanced computer programs analyze images from computed tomography (CT) scans, as well as 3D scans of the face, teeth, jaws and occlusion. This data allows the surgeon to accurately assess the patient's condition and plan the procedure in detail. Special 3D scanners capture the mutual relations of the jaws, contributing to precise planning. The surgeon performs the procedure virtually on the computer, determines the cutting lines and then new positions of the activated jaw fragments to obtain the best functional and aesthetic effects. The planned positioning and alignment of the jaws are transferred to the operating room using custom-made plates and templates printed with 3D printers, based on the computer-determined procedure plan. Additionally, 3D printers are used to create models of various facial parts, jaws, and teeth, which aid in diagnosing defects and enable surgeons to meticulously plan and perform the surgery. These modern technologies ensure high precision in surgery, improving outcomes and minimizing the risk of complications.

8. Please describe the typical course of genioplasty and outline the main phases of this procedure.

Genioplasty is a surgical procedure to correct the shape and size of the chin bone, addressing issues such as asymmetry, excessive protrusion,

or retraction. This procedure enhances facial proportions, tightens soft tissues of the lower face and neck, and improves the patient's self-confidence. It does not require preparatory orthodontic treatment and does not alter occlusion conditions. Typically performed under general anesthesia, the surgery involves making an incision inside the mouth to avoid visible scars. Specialized tools, such as electric or ultrasonic saws, are used to model the chin bone and performs an osteotomy to cut and reposition the chin bone fragment to the desired position. The repositioned bone is stabilized using titanium plates and screws. Genioplasty can be reductive (reducing or narrowing the chin) or augmentative (most often protruding the chin) and can be done as a standalone procedure or combined with other orthognathic or plastic surgeries.

9. What is blepharoplasty?

Blepharoplasty is a plastic surgery procedure to correct the upper and/or lower eyelids. It is particularly common for the upper eyelids. The eye area ages the fastest, as the skin here is very thin and delicate. Symptoms include excessively flabby skin, drooping eyelids, wrinkles, a feeling of heaviness, and limited vision. Upper eyelid correction is a relatively minor facial procedure with a low risk of complications. Performed under local anesthesia, it involves removing excess flaccid skin, correcting the orbicularis oculi muscle, and removing or repositioning fatty compartments, commonly called hernias. Modern suturing techniques, using extremely thin sutures and placing the scar in the natural fold of the eyelid, make the procedure leave minimal visible traces. Blepharoplasty can be combined with other procedures, such as face, eyebrow, or lip lifts. Lower eyelid correction is more complicated and carries a higher risk of complications. In some cases, it can be performed

from a transconjunctival approach, leaving no skin marks. For more advanced cases with significant skin flaccidity, an external approach under the lash line is used. This procedure includes removing excess fat («bags under the eyes»), redistributing fat to areas of loss (such as the tear trough), reshaping the orbicularis oculi muscle, and tightening the skin. In some cases, additional procedures like cantopexy or canthoplasty are necessary.

10. What is a facelift and what areas are treated?

A surgical facelift is the most effective method to restore a youthful appearance to the face and neck. Aging causes wrinkles, skin laxity increases, changes in the face's oval shape, deepened

nasolabial folds, sagging cheeks, excess skin in the jaw area, a blurred jawline, and volume loss. Nowadays, the most popular type of facelift is the deep plane facelift, which targets deeper facial tissues to lift both the lower and middle parts of the face. This technique works on the deeper structures on the face and neck (SMAS and platysma), improves skin tension, the jawline and removing

excess skin. It provides long-lasting, natural results without creating an artificial look. The procedure is performed under general anesthesia, with the scope determined during consultation based on the patient's needs and expectations. Incisions are made in natural folds and wrinkles to minimize visible scars. Often, this surgery is combined with upper and lower blepharoplasty, midfacelift, temporal lift and lip lift. It requires significant experience and skill from the surgeon.



HEPATOLOGIST, Prof. Bożena Walewska- Zielecka, MD, PhD

My name is Bożena Walewska-Zielecka. I am the Medical Advisor to the Management Board of Medcover, the National Coordinator of the Polish Network of Hospitals and Health Promoting Facilities at the National Institute of Public Health – National Institute of Hygiene of the National Research Institute, a member of the Management Board of the International Network of Hospitals and Health Promoting Facilities, a hepatopathologist at the Department of Pathology of the UCC MUW, and a hepatologist certified by the Polish Society of Hepatology.

What professional achievements are you most proud of?

This is quite a difficult question because in every area of my activity I believe that I would find reasons to be professionally proud. I have been working at Medcover for almost 30 years, including serving as the Medical Director of Medcover Healthcare Services in Poland, and currently as the Medical Advisor to the Management Board. I am proud of the introduction of medical standards, and supervision over medical quality and medical events on a national scale to an extent unprecedented in outpatient care. In the field of public health, I had the pleasure of participating in the work of the Public Health Committee of the Polish Academy of Sciences, and at the same time, I was the President of the International Network of Health Promoting Hospitals, and now the Polish Network. We have prepared standards for the implementation of health promotion in hospitals and outpatient medical facilities, as well as the self-assessment tool. As a doctor specializing in the field of pathology of liver diseases, I am proud that I can pass on my knowledge to the next generations of doctors – as the author of chapters in Szczeklik's internal medicine textbooks, and the recently published «Hepatology.» This is a great professional distinction.



What are your main responsibilities as a Member of the Scientific Council and Medical Advisor to the Management Board at Medcover Healthcare Services?

Both of these functions are combined. My task is to support the supervision of the broadly understood medical quality of the services provided, including patient safety, support important medical projects, and supervise scientific research conducted at Medcover (also in terms of patient safety and data security).

What are your professional goals for the coming years?

I aim to influence the healthcare system towards a shift from reactive medicine to proactive population health initiatives. I believe that efforts within the healthcare and educational sectors should prioritize promoting broad-based health behaviors. Health promotion extends beyond preventing cancer

or chronic diseases; it involves reshaping societal attitudes and fostering conscious, health-oriented choices. These efforts are championed through the Polish Network of Health-Promoting Hospitals and Medcover's commitment to a comprehensive approach to patient health. I believe that enhancing the health-centric approach among Medcover's care recipients, encompassing physical, mental, and social well-being, will contribute significantly to the overall wellness of employees and their families.

What challenges do you see in the future of medicine in Poland?

In Poland, the system of private and public healthcare consists of two mutually supporting entities; today, one cannot function without the other. The healthcare system is currently grappling primarily with the challenge of increased costs. This issue affects both private and public facilities. Historically, inflation has always been high in the medical services market. However, what we are observing now results from multiple factors. Firstly, the population is aging, leading to increased demand for medical services – patients are using medical services more frequently than in the past. Additionally, the technology for providing medical services is evolving – new, innovative, but more expensive components are appearing, for example, in diagnostics, which increases the costs of providing medical care. Furthermore, there are salary increases in the medical sector, driven by both the rise in the minimum wage and a reduction in available staff. There is considerable discussion about staff shortages – on one hand, we have fewer specialists, but on the other, Poles are much more likely to visit doctors. Therefore, there are ideas to optimize certain processes, introduce automation, and expand telemedicine services. It is also crucial to invest in medical staff and elevate the roles of professions such as nurses and midwives.

What health initiatives do you consider most important to implement at national level?

Coordinated healthcare is crucial to ensure that patients can move efficiently through the system, making diagnosis and treatment effective. However, health managers at the national level must also implement

a comprehensive health education system at multiple levels to ensure that society's members live as long as possible in good health. Health behaviors have the greatest impact on our health—not genetics, not the organization of the care system, but our own actions. This is certainly a long-term process, but it should be pursued consistently, ensuring that all stakeholders understand the benefits of such an approach.

What is the importance of health education in improving the health of society?

I am a strong supporter of health education from an early age, but it is important that the education is effective. It is not only about providing information but also about motivating people to maintain appropriate health behaviors – i.e., pro-health behaviors. This includes motivating, setting an example, and supporting families so that the bad habits of parents are not perpetuated in children. Building the so-called health literacy of society is a task that takes years.

What are the most important steps in the prevention of liver disease?

Prevention of liver disease has its limitations; we cannot always avoid the disease, but in many cases, it is possible. First of all, vaccinations are crucial. Vaccination against hepatitis B not only prevents HBV infection but also development of chronic hepatitis B, cirrhosis, and even hepatocellular carcinoma. The second recommended vaccination is against hepatitis A, also known as foodborne jaundice. This infection occurs both in Poland and in countries with warm climatic zones. Therefore, I always recommend this vaccination to people traveling to tropical zone countries for their dream holidays. Hepatitis C occurs when the HCV virus enters the bloodstream, so prevention includes effective procedures for sterilizing reusable equipment used in medical or cosmetic procedures and using only disposable equipment (needles, syringes). There is no effective vaccination against HCV infection so far. Secondary prophylaxis, or early detection of the disease, involves testing the blood for the presence of anti-HCV antibodies. However, the most common liver disease currently diagnosed is steatotic liver disease, now referred

to as metabolic dysfunction-associated steatotic liver disease (MASLD). Metabolic factors conducive to MASLD include obesity, type II diabetes, and an abnormal lipid profile. Remember, steatotic liver disease can also be caused by alcohol consumption, causing alcohol-related liver disease (ALD). Often, we encounter an overlap of harmful factors such as obesity, type II diabetes, and alcohol abuse. A possible and not uncommon complication of liver steatosis disease is Metabolic dysfunction Associated Steatohepatitis (MASH), a chronic process leading to cirrhosis of the liver and even hepatocellular carcinoma. Given these harmful factors, it is clear that to avoid steatotic liver disease, it is necessary to maintain a healthy body weight, treat comorbidities (e.g., diabetes or hypercholesterolemia), and limit alcohol consumption to a minimum or, ideally, avoid it altogether.

What are the most common liver diseases you encounter in your practice?

In addition to liver steatosis, in my outpatient practice, I often encounter focal lesions in the liver that are detected incidentally during ultrasound examinations performed for various reasons. This phenomenon is a result of the widespread use of imaging tests such as ultrasound. Most often, these are benign lesions that do not require supervision, but they cause significant concern in patients. Of course, I also see patients with rarer and more severe liver diseases who absolutely require specialized hepatological care.

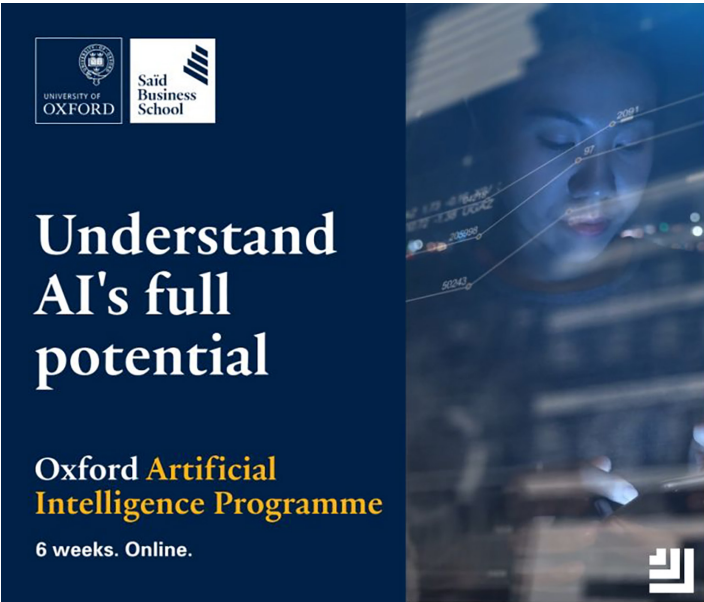
What are the latest technologies and innovations in the diagnosis and treatment of liver diseases that you consider groundbreaking?



A breakthrough in hepatology occurred with the introduction of drugs with direct antiviral activity (DAA) for the treatment of HCV infection, so the chance of full recovery of patients reaches 99%. Another modern treatment is liver transplantation—a life-saving procedure for people with advanced liver diseases who had no chance of survival in the past. The latest development is the FDA's approval, in March 2024, of a new drug for the treatment of metabolic dysfunction associated steatohepatitis (MASH)—

resmetirom. Hopefully, it will be available in Poland one day. In the field of diagnostics, we now have the access to advanced genetic testing to detect rare genetically determined liver diseases.

What actions can improve health prevention among Poles?

Education and promotion of health-promoting behaviors. I believe that all healthcare entities should implement health promotion within their scope of duties. I refer to the standards of the International Network of Health Promoting Hospitals and Health Services (Health Promoting Hospitals – NIZP PZH - PIB), where key actions in this area have been developed based on best practices. The media also play a key role – both traditional and social media (which have become a traditional way of communicating). Promoting a healthy lifestyle and creating an atmosphere where healthy eating and physical activity are socially accepted as a philosophy of life is essential. Unfortunately, I notice a large amount of misleading information, so it is important for people using the media to have well-founded knowledge about health and pro-health attitudes so that they can critically evaluate this information. This knowledge can be gained at school and even in kindergarten. According to information reports, these ideas are supported by the Ministry of Health and the Ministry of Education, so there is a chance to implement them – which I would very much like to see.



Understand AI's full potential

Oxford Artificial Intelligence Programme

6 weeks. Online.

Clinical Dietetics

– Wanda Baltaza PhD

My name is Wanda Baltaza, PhD.

I am a clinical dietitian with a doctorate in health and medical sciences. I am also a lecturer at the Medical University of Warsaw and the Director of the Longevity Nutrition Department for the Longevity Center. This Center focuses on preventive medicine and longevity. For many years, I have worked with patients in various areas, particularly metabolic and hormonal disorders, as well as nutrition supporting fertility and pregnancy.

Privately, I love great cuisine – cooking and discovering new culinary gems is pure pleasure for me. Among my friends, I often play the role of a “self-proclaimed” culinary critic.

How Can Diet Support Our Health and Beauty?

A good diet leads to better immunity, improved mood, and more beautiful skin. In fact, the skin is often the first site to reflect nutrient deficiencies. We must learn to take care of ourselves from the inside out.

By providing our body with the right nutrients, we can support its functions, including the regeneration of skin, hair, and nails. Of course, we are all different. individual Different health conditions, suggest different needs. However, there are some universal rules that will always apply:

Eat Simple and Colorful!

Choose the least processed products. Eat at least two colors of vegetables every day. These are the best sources of essential antioxidants, the best way to fight the ravages of stress. They can slow down the aging process of the skin.

Take Care of Good Sources of Protein

Protein is a solid building block of our skin, hair, and nails.



Drink the Right Amount of Water

You can't do without water! If we want to have firm, moisturized skin, we need to drink at least 2 liters of water every day.

What Foods Are Best for Healthy Skin?

For healthy skin, it is beneficial to consume products rich in antioxidants, vitamins, and healthy fats. Here are a few recommendations:

Fruits and Vegetables: Berries, citrus fruits, peppers, and spinach are rich in vitamins C and E. These help protect the skin from damage. Vitamin C is also necessary for the production of collagen, a protein crucial to the growth and replenishment of skin.

Nuts and Seeds: These contain healthy fats and vitamin E to which moisturizes the skin. Additionally, they are a source of protein and minerals necessary for tissue reconstruction.

Fish: Especially fatty fish like salmon, which is rich in omega-3s. Omega-3s reduce inflammation and help keep the skin hydrated.

Is there a list of specific vitamins and minerals that support hair and nail health?

Absolutely! Every nutrient plays a crucial role in supporting the health of our hair and nails, but here are a few that stand out:

Biotin (Vitamin B7): Helps in the production of keratin, a key protein in the structure of hair and nails.

Vitamin A: Essential for the production of sebum, which moisturizes the scalp.

Zinc: Essential for cell growth and tissue repair processes.

Vitamin C: A powerful antioxidant similar to its benefits for skin and joints, essential for collagen production, which strengthens hair and nails.

What are the best sources of collagen in the diet?

Collagen is a protein that forms the basis of our skin, hair, nails, and joints. The best sources of collagen in the diet are:

Bone broth: Cooked from animal bones and containing a lot of collagen.

Fish: Especially the skin of fish, which is rich in collagen.

Gelatin: Derived from collagen and often added to various dishes.

Although bone broths have recently become fashionable, these ingredients are not always the obvious choice, especially as many people are opting for diets with reduced animal products.

This is why collagen supplements are becoming more popular, particularly those in the form of collagen hydrolysate, which is more easily absorbed.

However, it's important to remember that supplements should complement a healthy, balanced diet, not replace it!

5. What should the modified diet for people with sensitive skin prone to irritation be?

In the case of a diet for people with sensitive skin, individualization is of particular importance. Hence, the menu should be rich in anti-inflammatory and soothing ingredients:

Products rich in omega-3 fatty acids: Fish, flaxseed, walnuts.

Vegetables and fruits: Especially those with a low glycemic index, such as berries, spinach, and broccoli.

Healthy fats: Plant-based options like olive oil, black cumin oil, and seeds.



HARVARD
MEDICAL SCHOOL

OPEN ENROLLMENT PROGRAM

Health and Wellness: Designing a Sustainable Nutrition Plan

Dates: August 22 - October 24, 2024
Last Day to Enroll: August 29, 2024
Duration: 8 weeks
Format: Online
Fee: \$3,050

It is crucial to determine which factors are causing individual irritation. Additionally, eliminating processed foods and limiting sugar and trans fats, which can increase inflammation, is also important.

Does drinking a lot of water really affect the appearance of the skin?

Drinking enough water is crucial for maintaining healthy and moisturized skin because it supports the turgor, or firmness, of our cells. Water is essential for all processes in our body. In the case of the skin, it is enormously helpful with skin maintenance:

Skin hydration: Promotes skin elasticity and firmness.

Detoxification processes: Removes toxins from the body, which can affect skin cleanliness.

Temperature regulation: Accomplished through the process of sweating, which, contrary to appearances, is important for skin health.

How to balance your diet to avoid nutritional deficiencies which may affect the appearance of your skin?

Health tests, nutrition analysis, and defining your most important goals are essential. To avoid nutritional deficiencies that can affect the appearance of the skin, the diet should be varied and well-balanced:

Variety: Incorporating different food groups to provide all the necessary nutrients.

Supplementation: Considering necessary supplementation of vitamins and minerals if your diet does not cover all needs.

Regular meals: Providing the body with constant access to nutrients.

What are your beauty rituals that help you maintain such a beautiful appearance?

My own beauty rituals are simple yet effective:

- **Daily skin care:** Cleansing is essential for me – in fact, it's the most important element that I take care of both morning and evening. I focus on moisturizing, both externally and internally, and I use sun protection with SPF50 all year round.

- **Healthy diet:** Although it's known that shoemakers often go barefoot, and my diet is not always perfect, not a day goes by that I don't ensure I get the right amount of vegetables and healthy fats (avocado, romaine lettuce, olives, and olive oil are staples in my home).

- **Physical activity:** Regular exercise improves circulation and positively affects the skin. Even if I don't have time for a proper workout or a Pilates session, I try to stretch for at least 15 minutes each day and exceed 6000 steps.

- **Relaxation and sleep:** No matter how stressful and intense my life gets, I ensure good quality sleep and relaxation (at least a little).

Where did your passion for dietetics come from?

My passion for dietetics, and healthy eating, has been ongoing since childhood. In my home, food was always simple and good, and the whole family placed great importance on making healthy choices. My grandparents grew their own tomatoes, cucumbers, lettuce, and zucchini. Our orchards were full of fruit, which I helped preserve. I grew up with flavors and colors that are hard to find now. When it came time to choose my studies, I considered medicine and clinical dietetics. My teenage mind decided it would be better to help people achieve health and their dream appearance in the most natural way. Over time, my fascination with how food affects our health and well-being turned into great satisfaction from observing positive changes in my patients. This gives me tremendous motivation to continue working!

In which Clinic do you provide consultations?

I provide consultations in several places in Warsaw. Most often, you can locate me at the Longevity Center Clinic and the Infemini Clinic.

September 6-7th, 2024 | Berg Hall, Li Ka Shing Center

Stanford Big Ideas in Medicine

An Exploration of the Future of Healthcare

Keynote

Amir Dan Rubin

Early Diagnostics **Moderators**

James Zou, PhD
Professor, Researcher

Esther Landhuis, PhD
Science & Health Journalist

Robert Lustig, MD
Professor, Neuroendocrinologist

Ilana Yurkiewicz, MD
Author, Oncologist, Physician

Primary Care

Holly Tabor, PhD
Director of Stanford Center for Biomedical Ethics

Elizabeth Comen, MD
Clinician, Physician-Scientist

Megan Mahoney, MD
Chief of the Department of Family and Community Medicine at UCSF

Ilana Yurkiewicz, MD
Author, Oncologist, Physician

Kim Chiang, MD
Professor, Physician

AI/Digital Health

Eleni Linos, MD MPH
Dermatologist, Epidemiologist

Lisa Rotenstein, MD
Physician, Researcher

Eli Cahan, MD
Pediatrician, Journalist

Michael Nedelman, MD
Producer

Matthew Lungren, MD
Chief Medical Information Officer

Mental Health

Anna Lembke, MD
Professor, Clinician

Claire Bidwell Smith, LCPC
Therapist, Writer

Tanya Luhrmann, PhD
Professor, Writer

Boris Heffets, MD PhD
Anesthesiologist, Researcher

David Rehkopf
Epidemiologist, Associate Professor

Stanford Big Ideas in Medicine Conference

Stanford MEDICINE

stanfordbigideas.org

CARDIOLOGY prof. dr hab. n. med. Marek Kuch

My name is Marek Kuch, PhD.

I am a Professor of Medical Sciences and have recently served as the Vice-Rector for Student Affairs and Education at the Medical University of Warsaw. Professionally, I am the Head of the Department and Clinic of Cardiology, Hypertension, and Internal Medicine at the Mazovian Bródno Hospital.

Privately, I love mountain climbing (especially in the Tatra Mountains), cycling, dancing, and music, particularly film music.

What have been the most satisfying moments in your scientific and professional career?

Doctorate, habilitation, and professorship are spectacular achievements that mark the various stages of a comprehensive academic career. They are solemn commitments and remain for life as a testimony to ultimate scientific accomplishments. In a professional career, the situation is similar. Subsequent levels of promotion, such as obtaining the first and second degrees of specialization in Internal Medicine and Cardiology, are equally important.

From the very beginning of my work in 1988 at the Mazovian Bródno Hospital, the opportunity to manage a growing team has been an important step forward. However, patient satisfaction is always the most important. It is the patient's gratitude and the improvement of their health that make us the happiest.

Which of your publications have generated the greatest interest in the scientific community and why?

Although I mainly focus on teaching, two medical events were particularly memorable to me. The first was a presentation at a European congress that drew the attention of editors from a prestigious British publishing house. As a result, my work, included as part of a larger publication, was later cited thousands of times.



The second event took place in the United States, where, after my presentation, I was approached and congratulated by an outstanding specialist considered one of the best doctors in our field. These were unforgettable moments, as the beginnings of a scientific career are always remembered with the genuine emotions. I generally have many beautiful memories from the USA, especially the famous Harvard campus. I spent half a year at Harvard Medical School, where I met many Poles and realized that Poland is well represented.

However, we do admire our American peers for their brilliant logistics and access to the most modern medical equipment. America is famous for its innovative medical technologies and is a global leader in Medtech.

How do you see the future of medical education in Poland, and what changes do you think are necessary to better adapt it to the needs of modern medicine?

Medical education must constantly evolve, and entire teams of specialists work to improve the quality and methods of teaching. It is necessary to respond to the changing world, particularly the development of artificial intelligence (AI).

However, the main issue remains the funding for educational programs. The introduction of modern technologies and innovative solutions is expensive, and in Poland, there is often a lack of financial resources to support these advancements. Overcoming this financial barrier is crucial for fully leveraging the possibilities of modern medicine.

What are the most important challenges faced by medical graduates today, and what steps does the Medical University of Warsaw take to meet them?

Medical graduates face significant challenges related to internships and residencies.

The reform requiring students to complete their residency during their final year of study allows them to gain necessary practical experience earlier. However, this reform requires substantial funding. Hospitals in large cities are unable to accommodate all students. This poses a serious problem. It is crucial to expand the provincial and district hospital base and to provide financial support to students, as relocating for an internship incurs costs that young people must cover.

The Medical University of Warsaw (MUW) is addressing these challenges by cooperating with the Medical Chambers. Additionally, there is a didactic challenge: previously, the sixth year was entirely devoted to education, but now it is necessary to complete the curriculum faster to make room for internships in teaching hospitals while still studying.

What are the plans for the Medical University of Warsaw? What is the future in the context of the developing educational infrastructure?

The development of educational infrastructure, with an emphasis on the Medical Simulation Center, is of key importance in the plans of the Medical University of Warsaw. This topic is addressed

in detail by numerous bodies within the individual faculties of the university and the Centre for Medicine, led by Dr. Marcin Kaczor, and Professor Robert Gałązkowski, the head of the mobile medical security group of the Air Ambulance Service.

They emphasize that the Centre plans to launch simulations of rescue operations and medical procedures. Due to the growing number of students, currently about 10,000, it is also necessary to expand the infrastructure, including new Cardiac Surgery departments and a Palliative Medicine Clinic.

Existing scientific units will be further developed, and there are plans to introduce facilities for people with disabilities. An important element will also be the introduction of changes to prepare students for the Objective Structured Clinical Examination (OSCE) practical exam, which will be conducted at the Medical University of Warsaw in five years. This exam tests the independent performance of medical procedures.

What are the latest developments in Cardiac Diagnostics? Can these revolutionize the treatment of heart disease?

The latest developments in Cardiac Diagnostics that may revolutionize the treatment of heart diseases primarily include advances in genetics. Genetic testing plays an increasingly important role and can significantly improve diagnostics.

Additionally, advanced methods of electrotherapy and invasive treatment of heart valves are being developed. Pharmacology continues to evolve, introducing new groups of drugs from time to time. However, the availability of skilled cardiac surgeons remains a challenge. While cardiac surgery is a traditional form of treatment, it remains relevant and valuable.

What are the most important factors affecting the effectiveness of Cardiac Rehabilitation especially in older patients?

Cardiac Rehabilitation is a field of Physiotherapy dedicated to cardiac patients, and it should encompass patients of all ages, not just the elderly or those with specific diseases. It is crucial to start

rehabilitation as early as possible, even from the moment the patient can move a finger after their serious health condition is stabilized. Although we usually focus on movement exercises, it is also important to include passive movements of the arms and legs. This aspect of rehabilitation is often underestimated, although it can significantly reduce the cost of treatment. The rehabilitation department has a team of specialists, including dietitians and other healthcare professionals, who work together to improve the patient's condition. Motivating patients is crucial, as rehabilitation can lead to outstanding results.

What are the latest technologies in monitoring and managing cardiac arrhythmias?

The latest technologies in the monitoring and management of cardiac arrhythmias include advanced Electrocardiographic (ECG) monitoring methods, ranging from traditional multi-day ECG Holter recording to modern ECG systems.

These modern monitors can be used both in hospitals and in patients' homes, enabling remote telemetry monitoring. For arrhythmias that are difficult to detect, implantable monitoring devices can be used, which help reduce the burden on hospitals. The future of cardiac arrhythmia management lies in artificial intelligence and new methods, such as ECG monitoring with smartphones or other advanced devices that can transmit data directly to doctors remotely.

Can you tell us about new drugs and therapies that show promising results in the treatment of hypertension?

The most important factor is for patients to take their medication regularly and to make lifestyle changes, including diet and physical activity. Studies show that comprehensive care, combining medication with lifestyle modifications, can effectively control even resistant hypertension. Drugs are selected individually, taking into account co-morbidities, in line with the current trend of personalized medicine. For years, five basic groups of drugs have been used in the treatment of hypertension, and these are continually being improved.

However, the goal is to adopt a more holistic approach to the body. The key to success is to manage metabolic syndrome, which includes hypertension, lipid disorders, diabetes, and obesity, through a comprehensive treatment approach. Patients are sometimes unaware that high blood sugar can also cause blood pressure problems due to certain correlations in the body.

What are the new strategies for the prevention of hypertension in high-risk populations?

Prevention of hypertension is crucial for high-risk populations and requires an integrated approach. While I am not as specialized in the prevention of cardiovascular diseases, as my friend Professor Piotr Jankowski, I can offer some advice through a mini decalogue:

1. Start with the intrinsic motivation to change your lifestyle.
2. Stand by your decision.
3. Understand that some habits need to be abandoned and some things must be given up.
4. Combine different methods such as diet and physical activity.
5. Plan prevention according to your specific needs.
6. Always take care of proper nutrition.
7. Use medications as prescribed by your doctor, remembering: «medication often as needed, but a healthy lifestyle always!»
8. Make physical activity a regular part of your life.
9. Pay attention to regular diagnostics, especially if you are in a high-risk group.
10. Stubbornly fight for your health and do not be discouraged by difficulties – NEVER GIVE UP!



Global Health Research and Innovation Speaker Series

Second Tuesday of each month
12:00 to 12:45 pm ET | Virtual

Showcases the latest scholarly and scientific advancements in global health across Harvard and beyond, to make cutting-edge research accessible to a diverse global audience, and to spark innovative solutions in the pursuit of health equity and improved health outcomes worldwide.

Cardiac Surgery – Professor Michał Zembala, MBA PhD MD

My name is Michał Zembala, a European-certified professor of cardiac and transplant surgery with over 20 years of experience. I specialize in a wide range of cardiovascular procedures, including minimally invasive endoscopic interventions, complex aortic repairs, and management of infective endocarditis. Proficient in transcatheter and transfemoral valvular procedures, I have also successfully led heart failure programs and performed over 300 heart transplants. As Vice-Rector of the John Paul II Catholic University of Lublin, I focus on advancing medical education and developing future medical professionals.

As a renowned cardiac and transplant surgeon, what originally attracted you to the field of thoracic surgery, and how has your perspective on the field evolved over the years?

My journey to cardiac surgery has been (and perhaps still is) long and winding. What draws us today is the unique magic of providing tangible help to a sick person who not only seeks it but desperately needs it. This is especially true for patients suffering from severe circulatory failure, for whom the only salvation is to replace their failing heart with a new one, previously taken from a deceased donor. Transplantology has profoundly changed my perception of this profession and specialization, which is gradually becoming quite niche, challenging, and demanding—not only for technical reasons but also due to the prospects offered by the labor market.

Your father, Prof. Marian Zembala, was a pioneer in Polish heart transplants. How has his legacy influenced your career, and what lessons have you learned from his groundbreaking work?

My father's legacy is primarily embodied in the hospital he left behind and the multitude of patients – women, men, and children – who trusted him implicitly. This hospital, with its walls, shape, and function, always reflecting the need



to serve society, has shaped me the most. The walls, because I grew up within them both professionally and academically. The time I spent leading the department of cardiac surgery and transplantology can be evaluated in various ways, but it certainly required courage – especially during the years of COVID-19, which defined and heavily marked my tenure. Nevertheless, it is undeniable that during this challenging period, the team I led achieved record results in both the quality and quantity of heart transplants performed.

Dr. Zembala, completing the Surgical Leadership Program at Harvard Medical School in 2019 is a significant milestone. Can you share the key insights and skills you gained during this program and how they have influenced your approach to surgical practice and leadership in Poland?

I chose the Harvard postgraduate program, as well as studies conducted by Lazarski University in Warsaw, primarily to competently, reliably, and honestly

lead the team I currently manage and will manage in the future. Leadership must be continuously learned by observing masters, students, and the relationships between them, as well as the changes occurring and the needs of both parties. I have always been particularly fascinated by change management and a very systemic approach to business solutions, such as Lean management. Implementing these in surgery was beneficial primarily for patient safety but also for the economic situation of the health facility.

During your stay at renowned institutions such as Montefiore Medical Center and Harvard University, you were exposed to the latest medical technologies. Can you discuss specific innovations in the field of medtech that have significantly improved surgical outcomes, and what steps are needed to bring these advancements to Poland?

Please remember that my scientific and research internships took place between 2005 and 2007, which, in the scale of modern medicine, feels like centuries ago. However, one innovation that left a lasting impression on me was the da Vinci surgical robots, already popular overseas and routinely used in heart surgery, gynecology, and urology. Today, nearly 20 years later, successive generations of da Vinci robots, as well as those from other manufacturers, are used routinely in our country. It is concerning that the robot developed at the Foundation for the Development of Cardiac Surgery seems to have stalled in progress. Currently, devices using artificial intelligence are in vogue, particularly those highly advanced in diagnostic imaging, which can effectively supplement the knowledge and skills of doctors and technicians.

Medical technology is advancing rapidly, especially in the United States. What medical innovations have you implemented in your surgical practice, and what are the most promising technologies you have encountered abroad that you would like to see in Poland?

Poland is developing rapidly, much like other European countries. The differences in access to modern technologies are diminishing, and we are catching up with the world's most developed economies at an accelerating pace. Transcatheter

heart valve repair or replacement procedures have become standard. We are increasingly utilizing devices that support heart chamber function in patients with heart failure as a definitive treatment. Additionally, we are making greater use of robotic surgery to treat heart disease. What would I like to see? Quality – quality in terms of transparency in publishing treatment results, patient profiles, and thus, recognition in the eyes of both payers and patients. This is what we miss the most today. While many boast about being «the first,» few discuss their treatment results, complication rates, or mortality rates. Yet, these are the details that matter most to patients.

What do you see as the next breakthrough in cardiac surgery and how are you preparing for it?

Heart surgery, especially in our country, is experiencing a crisis caused by both a lack of staff and a generational divide. Many experienced surgeons are nearing retirement, and the number of young entrants into this fascinating specialty is dwindling rather than growing. A breakthrough, in my view, will occur when this situation changes. To achieve this, we must demonstrate to young people a fast career path that combines precision, decisiveness, and emotional maturity with respect for work-life balance, a good salary, and opportunities for scientific and academic development.

Transplantology is a highly specialized field. Can you share some of the most challenging cases you have encountered, and what lessons have you learned from these experiences?

Yes, heart transplantation is akin to replacing the engine in an old car – the vehicle suddenly comes to life and starts working normally. Each case is unique, with every patient carrying a different burden of illness and hidden disability, each deserving of a long story. Interacting with patients who are on the brink of death teaches humility and respect for life while also familiarizing one with the process of dying. A competent team of specialists tackles increasingly difficult cases, pushing boundaries not out of bravado but from a deep awareness of their skills and knowledge.

Dr. Zembala, despite the enormous pressures and challenges associated with cardiac surgery, you are known for your kindness and compassion. Could you share a moment or experience with a patient that touched you deeply and reminded you of the deep human connections at the heart of your work?

Recalling Professor Władysław Bartoszewski, we might say, «it is worth being decent.» I believe that in the roles of doctor, nurse, paramedic, physiotherapist, or medical assistant, «it's worth being human»—a normal, non-pompous person who knows how to care for another human being. The relationship we establish with patients is extremely delicate and intimate. Patients trust us, share their stories, confide their problems, and sometimes cry when confronted with their helplessness. Faced with such openness, one cannot stand idly by. Trust is fundamental to the work of a medic, especially a surgeon. A sick person entrusts us with their health, and sometimes their life.

With your recent appointment as Vice-Rector of the John Paul II Catholic University of Lublin, how do you see your role in shaping the future of medical education and research at the university?

We have a long journey ahead, and I have laid the foundation for it. The Catholic University of Lublin, with over 100 years of history and tradition, only began educating future doctors last year. The process, spanning six academic years and a year of internship, includes pre-clinical classes and practical sessions in hospitals and clinics. Our current focus must be on providing a robust educational foundation in the basics of medicine – anatomy, physiology, biochemistry, and more. These are essential for further learning. We aim to skillfully combine traditional teaching methods with modern aids, as the modern world demands. However, the university's rank is primarily determined by its staff, so we will emphasize their development, internationalization, and continuous training.

Balancing a demanding surgical career with academic and leadership responsibilities

can be challenging. How do you manage to maintain this balance and what advice do you have for future cardiac surgeons and medical leaders?

Surgery is a demanding yet rewarding field. Balancing work-life commitments can be difficult but is necessary. The need for scientific and academic development complicates the situation further, as juggling classes with students, grants, publications, and preparation for conferences amidst surgical duties is challenging. I don't have a simple solution, and my strategies have sometimes led to deprioritizing «home.» Today, I know that developing the medical and organizational competencies of team members builds trust, allowing me to set aside my phone during vacations and, after two weeks, receive a reassuring message from a team member: «Everything is okay, we're glad you rested.»

ISON LEVEL 2 WORKSHOP

Prof. Dr. med. Marc Possover
Founder of Neuropelveology

COURSE CONTENT

- Dissection on Cadavers
- Theoretical Sessions
- Live Surgery

Key Discussions & Insights

- ✓ Pelvic Nerves Surgeries
- ✓ Diagnosis in Neuropelveology
- ✓ GNS & LION Procedures

October 17th - 19th 2024

SECURE YOUR SPOT

Register via possover-neuropelveology.com

Molecular Biology – Łukasz Sobkowiak, PhD

My name is Dr. Łukasz Sobkowiak, and I am a molecular biologist. For several years, I worked in academia before eventually transitioning to the biotechnology and pharmaceutical industry. I am fascinated by new technologies and their transfer to business.

Can you briefly describe your educational background (including Stanford School of Medicine) and what led you to specialize in molecular genetics?

I completed my undergraduate and doctoral studies at Adam Mickiewicz University in Poznań, specializing in molecular biology with a focus on post-transcriptional regulation of gene expression by microRNAs. During my studies, I conducted research on the model plant *Arabidopsis thaliana*, which provided me with a solid foundation in molecular genetics and plant biology.

After earning my PhD, I pursued a postdoctoral fellowship at Stanford University in California, USA, where I joined the Human Gene Therapy Program at the Center for Clinical Sciences Research. There, I worked with adenoviral vectors and explored the delivery of siRNA molecules to human cells, further honing my expertise in molecular genetics and gene therapy techniques.

The knowledge and skills I acquired during my academic career have proven invaluable in my current role as a Medical Manager at a major pharmaceutical company. My journey through academia and research has solidified my passion for molecular genetics, particularly in the context of therapeutic applications, and has equipped me with the expertise to contribute effectively to the field of medical science.

Can you discuss a recent breakthrough in molecular genetics that you find particularly exciting?

Contemporary molecular biology is fascinating. Every day, we learn new insights about the functioning of cells in the human body. I will focus on four areas that represent breakthroughs in biomedical research.



CRISPR-Cas9 has transformed molecular genetics by allowing precise genome editing. This technology enables the addition, deletion, or modification of specific genes with unprecedented accuracy. Recent advancements include base editing and prime editing, which allow for even more precise genetic modifications without causing double-strand breaks in DNA. These refinements enhance the safety and applicability of genome editing for therapeutic purposes, such as correcting genetic mutations that cause diseases like sickle cell anemia and muscular dystrophy.

Single-cell sequencing technology has revolutionized our understanding of cellular diversity and function. By analyzing the genetic material of individual cells, researchers can uncover detailed insights into cellular heterogeneity, gene expression patterns, and the intricate dynamics within tissues. This breakthrough is particularly impactful in cancer research, as it allows scientists to identify rare cancer cell populations,

understand tumor evolution, and develop targeted therapies. It also has significant implications for developmental biology and understanding complex tissues like the brain.

The development of RNA-based therapeutics, including mRNA vaccines and RNA interference (RNAi) technologies, has opened new avenues for treating diseases. The success of mRNA vaccines for COVID-19 has demonstrated the potential of this approach for rapid and effective vaccine development. Additionally, RNAi technologies, which use small interfering RNAs (siRNAs) to silence specific genes, are being explored for treating genetic disorders, viral infections, and cancers. These RNA-based therapies offer precise and versatile tools for modulating gene expression and treating a wide range of conditions.

Epigenetic editing is an emerging field that involves modifying the epigenome, the chemical modifications on DNA and histone proteins that regulate gene expression without altering the underlying DNA sequence. Techniques like CRISPR-based epigenome editing allow scientists to precisely target and modify epigenetic marks, such as DNA methylation and histone modifications. This breakthrough has significant potential for reprogramming cellular states, understanding disease mechanisms, and developing new therapies for conditions like cancer, neurodegenerative disorders, and metabolic diseases.

These breakthroughs represent significant advancements in molecular genetics, each with profound implications for research, medicine, and therapeutic development.

How do you see the field of molecular genetics evolving in the next decade?

The field of molecular genetics is poised for significant advancements in the next decade, driven by rapid technological innovations and increasing interdisciplinary collaborations.

The integration of molecular genetics into clinical practice will continue to expand, leading to more personalized and precise treatments. Advances in genomic sequencing, gene editing, and biomarker

discovery will enable healthcare providers to tailor therapies based on an individual's genetic profile. This approach will improve the efficacy and safety of treatments for complex diseases such as cancer, cardiovascular disorders, and neurodegenerative conditions.

Building on the success of CRISPR-Cas9, new and more refined gene-editing tools will emerge. Techniques like prime editing and base editing will become more efficient and safer, minimizing off-target effects and enabling precise genetic modifications. These advancements will open new possibilities for correcting genetic mutations and developing novel therapies for previously untreatable genetic disorders.

As we unravel the complexities of the epigenome, new therapeutic strategies targeting epigenetic modifications will emerge. Epigenetic editing tools, such as CRISPR-based systems, will enable precise modulation of gene expression without altering the DNA sequence. These therapies will have significant implications for treating diseases with an epigenetic component, including cancers, metabolic disorders, and neurodegenerative diseases.

The field of single-cell genomics will continue to grow, providing deeper insights into cellular heterogeneity and function. Combined with spatial genomics, which maps gene expression within tissues, these technologies will enhance our understanding of complex biological systems, such as the brain and tumor microenvironments. This knowledge will facilitate the development of targeted therapies and improve our understanding of disease progression and treatment responses.

AI and machine learning will become integral to molecular genetics research and clinical applications. These technologies will enhance data analysis, enabling researchers to identify complex genetic patterns and predict disease outcomes. AI-driven tools will also facilitate drug discovery and development by optimizing the design of therapeutic molecules and predicting their interactions with biological targets.

The accumulation of vast genomic data sets from diverse populations will improve our understanding

of genetic diversity and its impact on health and disease. This will lead to the identification of novel genetic variants and the development of more inclusive and effective treatments. Collaborative initiatives and open-access databases will play a crucial role in advancing this area.

I'm sure that the next decade will see molecular genetics driving transformative changes in medicine, biotechnology, and our understanding of life sciences. The convergence of advanced technologies, interdisciplinary collaborations, and a deeper understanding of genetic and epigenetic mechanisms will pave the way for innovative solutions to some of the most pressing health and environmental challenges.

What role do you think genetics will play in personalized medicine?

Genetics will play a pivotal role in the advancement and implementation of personalized medicine, fundamentally transforming how we approach diagnosis, treatment, and prevention of diseases. By understanding an individual's genetic makeup, healthcare providers can develop customized treatment plans that are more effective and have fewer side effects. Genetic information can help determine the most appropriate medications, dosages, and treatment protocols for each patient. For instance, pharmacogenomics studies how genes affect a person's response to drugs, allowing for more precise prescriptions that minimize adverse reactions and enhance therapeutic outcomes. Genetic testing can identify individuals at high risk for certain diseases, enabling early intervention and preventive measures. For example, people with BRCA1 or BRCA2 gene mutations have a higher risk of developing breast and ovarian cancers. By identifying these individuals through genetic screening, proactive measures such as enhanced surveillance, lifestyle modifications, or preventive surgeries can be undertaken to reduce the risk of disease development. Genetic information can enhance the accuracy of disease diagnosis. Certain genetic markers are associated with specific diseases, and their presence can help confirm a diagnosis that might be ambiguous based on symptoms alone. Additionally, genetic profiling can reveal the underlying causes of rare or complex conditions, leading

to more precise and timely diagnoses. Cancer treatment is one of the most promising areas for personalized medicine driven by genetics. Tumor genetic profiling can identify specific mutations driving cancer growth, allowing for targeted therapies that specifically attack cancer cells while sparing healthy tissue. This approach increases treatment efficacy and reduces side effects compared to traditional chemotherapy and radiation. Advances in gene therapy, which involve modifying or replacing defective genes to treat or prevent disease, are becoming increasingly feasible. Techniques like CRISPR-Cas9 allow for precise gene editing, offering potential cures for genetic disorders such as cystic fibrosis, sickle cell anemia, and certain types of inherited blindness. Personalized gene therapies can be developed based on an individual's unique genetic mutations. Personalized medicine empowers patients by involving them in their own healthcare decisions. When patients understand their genetic predispositions and the rationale behind their personalized treatment plans, they are more likely to engage actively in their care and adhere to prescribed therapies. In my opinion genetics will be central to the evolution of personalized medicine, enabling more precise, predictive, and preventive healthcare. By leveraging genetic information, we can move towards a healthcare model that is tailored to the unique genetic profile of each individual, leading to better health outcomes and more efficient use of medical resources.

 **PROFESSIONAL
EDUCATION**

Learn Data Science from
**WORLD RENOWNED
MIT FACULTY**

**APPLIED
DATA
SCIENCE
PROGRAM**



12 WEEKS | ONLINE

How do you see the role of MedTech companies in advancing molecular genetics research?

MedTech companies play a crucial role in advancing molecular genetics research through the development and commercialization of innovative technologies and solutions. MedTech companies are at the forefront of creating cutting-edge diagnostic tools that enable precise and rapid genetic testing. These tools include next-generation sequencing (NGS) platforms, microarrays, and PCR-based systems that allow researchers and clinicians to analyze genetic information quickly and accurately. Enhanced diagnostic capabilities lead to better disease detection, personalized treatment plans, and improved patient outcomes. Companies are developing novel therapeutic technologies based on molecular genetics, such as gene therapy, RNA therapeutics, and CRISPR-based gene editing. By commercializing these technologies, MedTech companies facilitate the translation of research findings into practical treatments for genetic disorders, cancers, and other diseases, thus accelerating the adoption of personalized medicine. MedTech companies are integrating artificial intelligence (AI) and machine learning into molecular genetics research to analyze complex genetic data more efficiently. These technologies help identify patterns, predict disease risks, and develop new therapeutic strategies by processing large datasets and providing insights that would be challenging to achieve through traditional methods. By developing tools and platforms that enable precision medicine, MedTech companies support the customization of healthcare based on individual genetic profiles. These companies provide solutions for genetic screening, biomarker discovery, and personalized treatment planning, ensuring that patients receive the most effective and tailored therapies. MedTech companies navigate the regulatory landscape to ensure that new genetic technologies meet safety and efficacy standards. They work with regulatory bodies to gain approvals and provide quality assurance for their products, ensuring that the tools used in molecular genetics research and clinical applications are reliable and compliant

with regulations. In summary, MedTech companies are instrumental in advancing molecular genetics research by developing and commercializing innovative diagnostic and therapeutic technologies, integrating AI, supporting precision medicine, fostering collaborations, and ensuring accessibility and education. Their contributions are vital to translating scientific discoveries into practical applications that enhance healthcare and improve patient outcomes.

What are some of the most promising technologies or innovations from MedTech companies in the field of genetics?

MedTech companies are driving numerous promising technologies and innovations in the field of genetics. Companies like Deep Genomics and IBM Watson Health are leveraging artificial intelligence and machine learning to analyze complex genetic data. These technologies can identify patterns, predict disease risks, and discover new therapeutic targets, accelerating genetic research and the development of personalized treatments. Liquid biopsies, developed by companies like Guardant Health and Grail, offer a non-invasive method to detect genetic mutations and monitor cancer. By analyzing circulating tumor DNA (ctDNA) in blood samples, liquid biopsies provide real-time insights into tumor dynamics, treatment response, and disease progression, enabling personalized cancer therapy and early detection. Companies like Moderna and Alnylam Pharmaceuticals are pioneering RNA-based therapies, including mRNA vaccines and RNA interference (RNAi) technologies. mRNA vaccines, demonstrated by the success of COVID-19 vaccines, represent a new class of vaccines that can be rapidly developed and deployed. RNAi therapies use small interfering RNAs (siRNAs) to silence specific genes, offering targeted treatments for genetic disorders and other diseases. Synthetic biology companies like Ginkgo Bioworks and Synthetic Genomics are engineering organisms and biological systems for various applications. These include developing microbes for bioremediation, biofuel production, and synthesizing complex pharmaceuticals. Synthetic biology also contributes to creating innovative

therapeutic approaches, such as engineered cell therapies and artificial tissues. Companies like 23andMe and AncestryDNA are combining genetic testing with digital health platforms to provide personalized health insights. Wearable devices that monitor health metrics can integrate genetic information to offer tailored health recommendations, lifestyle modifications, and early disease detection, enhancing preventive care. Digital PCR, developed by companies such as Bio-Rad and RainDance Technologies, provides highly sensitive and precise quantification of nucleic acids. dPCR is used in various applications, including detecting low-abundance mutations, monitoring minimal residual disease in cancer, and measuring gene expression levels, enhancing the accuracy of genetic analyses. NGS has revolutionized genetic research and diagnostics by allowing rapid and comprehensive analysis of entire genomes or specific genetic regions. Companies like Illumina, Oxford Nanopore and Pacific Biosciences are continually advancing NGS technology, making it faster, more accurate, and more affordable. These improvements facilitate large-scale genomic studies and personalized medicine initiatives. These innovations and technologies from MedTech companies are driving significant advancements in genetics, offering new possibilities for research, diagnostics, and therapies that are transforming healthcare and personalized medicine.

There has been a lot of talk lately about hyperbaric oxygen therapy. Can you explain what HBOT treatments involve at pressures above 2 ATA and in which indications they can be used?

Hyperbaric oxygen therapy (HBOT) involves breathing pure oxygen in a pressurized chamber. At pressures above 2 ATA (atmospheres absolute), the therapy increases the amount of oxygen in the blood, which promotes healing and fights infection. Patients are placed in a hyperbaric chamber where the atmospheric pressure is increased to levels higher than normal sea level pressure. For treatments above 2 ATA, the pressure is typically 2 to 3 times the normal atmospheric pressure. Patients breathe 100% oxygen, which can be administered through a mask. Each session can last from 60 to 120 minutes, and multiple sessions are usually required, depending on the condition being treated. The high

pressure increases the amount of oxygen dissolved in the blood plasma, which enhances oxygen delivery to tissues, reduces inflammation, promotes angiogenesis (formation of new blood vessels), and accelerates wound healing.

HBOT at pressures above 2 ATA is used for various medical conditions. It is particularly effective in treating decompression sickness, often seen in divers, where dissolved gases come out of solution and form bubbles in the blood and tissues. It is also used for carbon monoxide poisoning, helping to quickly remove carbon monoxide from the blood and tissues, thus reducing the risk of long-term neurological damage. In cases of gas gangrene, caused by bacterial infections that produce gas within tissues, HBOT inhibits the growth of anaerobic bacteria and enhances the effectiveness of antibiotics. Chronic non-healing wounds, especially in patients with diabetes, benefit from HBOT as it promotes wound healing by enhancing oxygen supply to the affected area.

Furthermore, HBOT is beneficial in treating radiation tissue damage, where it improves oxygenation and promotes healing in irradiated tissues. It can temporarily provide the necessary oxygen to tissues in cases of severe anemia when blood transfusions are not an option. HBOT is also used to treat certain infections, such as refractory osteomyelitis (bone infections) and necrotizing soft tissue infections, and it can reduce inflammation, promote healing, and decrease the risk of infection in burn patients. HBOT is also used to improve performance in athletes and is utilized to slow down the aging process. HBOT at pressures above 2 ATA is a powerful adjunctive therapy for various medical conditions, particularly those involving hypoxia (lack of oxygen) and infection. It is essential to undergo these treatments under the supervision of a qualified healthcare professional to ensure safety and efficacy.

Recognizing the potential of HBOT, I am developing a network of Baromedical clinics with my business partners. We are already present in several cities in Poland and have recently opened clinics in Sopot and Berlin. We plan to expand to countries across Europe.

Abdominal Surgery, Transplantology, Proctology – Piotr Zelga, PhD MD

My name is Piotr Zelga. I am a graduate of the Faculty of Military Medicine at the Medical University of Lodz. From the first year of my studies, I was actively involved in scientific research, and during my education, I completed scientific internships and hospital placements in Belgium and at the University of Cambridge.

After completing my specialization in general surgery and defending my doctoral dissertation with distinction at the Medical University of Lodz, I pursued a one-year subspecialty training in pancreatic, liver, and bile duct surgery at Addenbrooke's Hospital, a key part of the University of Cambridge's biomedical campus. In addition to my clinical work, I also engaged in research and obtained a Master of Philosophy in Medicine from the University of Cambridge. Subsequently, I received the Kosciuszko Fellowship, and upon its completion, I continued my work at Massachusetts General Hospital, one of the world's leading hospitals, as a Senior Clinical and Translational Research Fellow in the Department of Surgery. I also completed postgraduate studies in Global Clinical Scholars Research Training (American version) at Harvard Medical School. My scientific work on the diagnosis and treatment of pancreatic cancer, conducted at the University of Cambridge and Harvard University, has been recognized by the Pancreatic Society of Great Britain & Ireland, the New England Surgical Society (USA), and has been honored with The Kenner Award for Early Detection of Pancreatic Cancer by the American Pancreatic Society. Currently, I am an assistant professor in the Department of General and Transplant Surgery at the Karol Marcinkowski University of Medical Sciences in Poznań, where I specialize in general surgery, oncological surgery, and transplantology. Privately, I am passionate about sailing and reading.

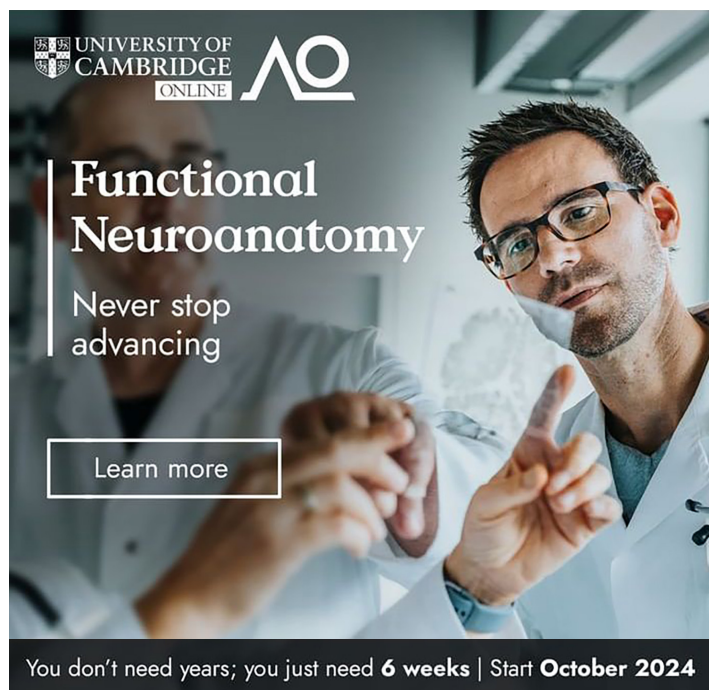


Could you describe your experience at Cambridge University Hospitals NHS Foundation Trust? What were the most important conclusions from this period?

Cambridge aims to be the largest biomedical campus in Europe. In addition to the renowned Addenbrooke's and Papworth hospitals, the campus is home to major pharmaceutical companies and molecular biology laboratories. A state-of-the-art hospital dedicated to cancer treatment is currently under construction, intended to be a symbol of excellence in scientific research and clinical medicine. Innovation and the development of startups focusing not only on genetics but also on various aspects of tele-patient care are encouraged. In clinical medicine, special emphasis is placed on the safety of procedures, patient safety, and the sense of care patients experience.

Surgeons often assess the success of their treatments based on the patient's satisfactory discharge after

surgery. However, it is also crucial to monitor the patient's health for years post-treatment to objectively assess long-term outcomes, particularly in oncological cases. This is done through regular audits, some of which are even made public. Such audits have advantages as they strive to ensure the highest quality of treatment objectively, but they also have disadvantages, as difficult cases may sometimes be avoided to not negatively impact statistics. To address this, specialized departments are created to focus on specific organ systems, gathering expertise and specialized knowledge, so no case goes without an informed treatment plan.



UNIVERSITY OF CAMBRIDGE ONLINE

Functional Neuroanatomy

Never stop advancing

[Learn more](#)

You don't need years; you just need **6 weeks** | Start **October 2024**

In Cambridge, paper documentation is no longer used; doctors rely solely on computers, which are also present during rounds, transported on mobile racks. This allows them to immediately review test results and record observations and medical orders, which are then executed by other team members. Regular meetings with other members of the therapeutic team, such as nurses, dietitians, and social workers, are held to ensure comprehensive patient care and to plan treatment for the coming days. For instance, a dietitian is essential for addressing malnutrition, and a social worker ensures that the patient will have adequate support after discharge. The tertiary referral hospitals in the UK are renowned globally, and I am grateful for the opportunity to learn about their operational mechanisms firsthand.

In Poland, similar initiatives are being gradually implemented on the initiative of individual doctors. However, organizational and legal challenges, such as the underestimation of medical procedures, currently make it more challenging to establish similar centers of medical excellence on a larger scale.

How has your fellowship at Massachusetts General Hospital (Harvard Medical School) contributed to your professional and academic growth?

A fellowship at Massachusetts General Hospital (Harvard Medical School) has had a profound impact on my professional and academic growth. For many in the British medical community, working at Harvard is a significant distinction, and there was even a time when a permanent exchange existed between the residents of the two university hospitals. My original goal was to go to the USA first and then work in the UK, but circumstances led me to the UK first and then to the United States. This path allowed me to gain valuable experience in Cambridge, particularly in the Hepato-Pancreato-Biliary (HPB) department, which proved extremely beneficial before my time at Harvard.

Initially, I received a four-month Kościuszko Fellowship. Following this period, Massachusetts General Hospital hired me full-time, though the salary was modest. Despite this, the experience was invaluable as it allowed me to engage in innovative scientific research on a global scale and be part of a team that establishes and implements international treatment standards in everyday clinical practice. Although the salary was limited, at Harvard, I had access to substantial funding, enabling me to conduct scientific research without financial constraints. Any equipment or reagents could be quickly procured, and if travel to another city was necessary for research, options like car rentals or flights were readily available, although Americans generally did not recommend rail or bus transport.

One of my responsibilities was to supervise the tissue and blood bank, using these resources for ongoing and future scientific research. During my stay, I collaborated with other research centers within Harvard and participated in multicenter national and international studies. This environment

was incredibly collaborative, filled with opportunities where everyone was open to the idea that joint efforts could lead to valuable scientific projects and global progress. The work was serious, but there was also an atmosphere of humor and camaraderie. Numerous meetings and mini-conferences provided opportunities to meet new people from different countries, all passionate about their fields.

Weekly meetings were held to discuss upcoming surgeries, where we reviewed planned treatments and possible options with interns, residents, fellows, and consultants. During such case studies, we discussed, for example, the treatment of high-profile patients like Steve Jobs.

As a representative of Harvard, I was expected to perform my duties to the highest standards. I also had the opportunity to attend numerous conferences, such as those in Miami or San Diego, with all costs covered, including travel, accommodation, and meals, as well as additional workshops if I chose to participate. After such enriching experiences, it was challenging to return to Europe. I believe that Polish doctors should seize such opportunities to develop and gain international experience, as it contributes immensely to their professional growth.

Could you describe specific research projects in which you were involved during your time at Harvard? How do you see the impact of these studies on the diagnosis and treatment of pancreatic cancer?

During my time at Harvard, I was involved in several key research, clinical, and laboratory projects focused on the diagnosis and treatment of pancreatic cancer and pancreatic cystic neoplasms, which are increasingly detected incidentally and can cause significant anxiety for patients. The main goal of my research was to develop a simple tool that clinicians could use to quickly assess the risk of cancer in Intraductal Papillary Mucinous Neoplasm (IPMN), one of the most common types of pancreatic cystic cancers, especially in cases where high-risk features are absent. This tool was intended to aid in deciding the eligibility for surgical intervention, which carries a high risk of postoperative complications, and to be easily understandable to patients during

consultations. I demonstrated that as the number of «worrisome features» increases, so does the risk of cancer in IPMN, with three such features equating to the risk posed by a single high-risk feature. This was the first study to establish such a relationship, and its findings were promptly integrated into clinical practice at MGH Hospital. Additionally, I examined the impact of blood type on cancer risk in IPMN and explored the phenomenon of nonalcoholic fatty liver disease following pancreatic resections.

Another significant project involved studying the potential of liquid biopsy in collaboration with the Center for Systems Biology at MGH Hospital. In pancreatic cancer, tissue biopsy for diagnosis is often challenging due to the tumor's location, the limited size of the sample, and the risk of complications associated with the biopsy procedure itself. Therefore, alternative diagnostic methods are being explored. Liquid biopsy offers a promising solution by analyzing molecules released by the cancer into the patient's peripheral blood rather than the tumor tissue itself. Markers such as extracellular vesicles (EVs) and circulating free DNA (cfDNA) are currently under investigation for their diagnostic utility in pancreatic cancer. However, a major limitation of liquid biopsy, particularly in the early stages of cancer, is the potential for tumor DNA to be undetectable or present in insufficient quantities for molecular analysis.

Our research focused on identifying highly specific mutations in single extracellular vesicles for pancreatic cancer, with a particular emphasis on detecting early-stage pancreatic cancer, which is currently very rare. Based on our findings at each stage of the study, we simulated the detection of cancerous tumors, estimating that approximately 92% of patients with pancreatic adenocarcinoma of about 1 cm³ (~2 mm × 2 mm × 2 mm) could be detected using the method we tested. At this tumor size, half of the cases may still be undetectable with imaging tests, and further refinement of the technique could lower the threshold for tumor detectability beyond that achievable with current imaging modalities. The continued development of liquid biopsy techniques

holds the potential to revolutionize the diagnosis of pancreatic cancer. These methods are minimally invasive compared to existing diagnostic approaches and may allow for the detection of very early stages of pancreatic cancer, before the disease becomes apparent in imaging studies. This advancement could significantly improve treatment outcomes, which remain unsatisfactory in many cases.

The image is a promotional graphic for a virtual event. At the top, there is a dark blue header with the RAPS San Francisco Bay Area Chapter logo and a stylized illustration of the Golden Gate Bridge. Below this, the text 'Virtual Event:' is written in large, bold, blue letters. Underneath, 'THE EVOLUTION OF AI IN MEDTECH' is written in smaller, bold, blue letters. The date and time 'August 14 2024 11:00 am - 12:00pm' are listed below. A blue-bordered box contains the event title 'The Evolution of AI in MedTech' in bold black text, followed by 'Event by RAPS San Francisco Chapter' and the date 'Aug 14, 2024, 8:00 PM - 9:00 PM CEST' with a calendar icon.

What were the key differences you observed between healthcare systems and surgical practices in the UK and the US compared to Poland?

The healthcare systems in the UK, the US, and Poland vary significantly. The Polish system somewhat resembles the British model, which is largely public and funded by taxation. In contrast, the US healthcare system is dominated by private health insurance, leading to considerable differences in access to care depending on a patient's insurance coverage.

In the UK and the US, particularly in large, renowned hospitals, there is a trend towards the creation of expert centers where surgeons specialize in specific organ groups, and in the US, even in particular organs. This specialization allows them to become leading experts in their fields. The US system also places significant emphasis on optimal patient preparation

for surgery and meticulous postoperative care, facilitating a quick recovery. This approach not only benefits patient health but also has economic advantages, as shorter hospital stays and fewer complications reduce costs for the patient, insurers, and hospitals. Moreover, patients can return to work sooner, which is economically beneficial given the high costs associated with maintaining such a healthcare system.

Multidisciplinary meetings are a standard practice in the US and UK, particularly in cancer treatment or specific disease entities. During these meetings, a team of doctors from various specialties collaboratively establishes a patient's treatment plan and supervises its implementation. In Poland, similar approaches have been adopted in oncological care, and recent experiences suggest that this method is also effective for other diseases.

In both the US and the UK, thorough documentation is required for every interaction and decision, including discussions with patients and their families about proposed treatments and any concerns they may have. An important aspect of care is defining the limits of treatment in case of adverse conditions or the lack of further effective treatment options, both during hospitalization and post-discharge. This helps alleviate the burden on specialized wards when hospitalization may not offer real benefit to the patient. However, these are challenging conversations and decisions.

In Poland, such practices are beginning to emerge, but broader implementation is sometimes hampered by staff shortages and administrative constraints.

Your doctoral dissertation focused on the genetic profiling of patients with colorectal cancer. How do you see the role of genetics in diagnosing and treating colorectal cancer?

My PhD thesis focused on assessing the impact of natural genetic variation in one of the DNA repair mechanisms on the risk of developing sporadic colorectal cancer, and how lifestyle and external factors such as diet, alcohol consumption, air pollution, and smoking can further modify this risk. Increasing evidence indicates that each

tumor, including colorectal cancer, is a unique entity that can differ significantly at the molecular level from others, for instance, due to mutations in the KRAS or BRAF genes. These differences influence the clinical presentation of cancer, including its location, aggressiveness, and responsiveness to chemotherapy.

We are now in the era of personalized therapies, where it is essential during histopathological examination not only to assess the cancer's characteristics, such as grade and histological type but also to determine its molecular profile, including the presence of key genetic mutations. This detailed information allows us to select the most appropriate chemotherapy or immunotherapy regimens or to decide against such treatments if a tumor is unlikely to respond, thereby avoiding unnecessary side effects for the patient.

Since my research, detailed histopathological reports incorporating genetic profiling have been introduced in many centers in Poland, and efforts are underway to standardize these reports globally to provide consistent information and facilitate optimal treatment decisions during multidisciplinary meetings. Furthermore, research is moving towards understanding not only the presence of specific mutations but also the proportion of tumor cells that carry these mutations and their spatial arrangement within the tumor. This level of detail could significantly enhance the precision of targeted therapies.

While such advanced genetic profiling remains at the forefront of cancer diagnostics and treatment, it is evident that the future of colorectal cancer management lies in increasingly accurate genetic profiling, which will enable the development of personalized therapies tailored to individual patients.

How do technological developments and medical innovations affect abdominal surgery?

In abdominal surgery, the trend initiated by laparoscopy continues, with a focus on minimizing perioperative trauma. This includes avoiding large surgical incisions and employing more precise surgical techniques in the affected area.

The development of robotic surgery exemplifies this trend, as it enhances precision and reduces trauma, increasingly becoming a standard in general surgery. Another advancement is hybrid surgeries, which combine external and endoscopic or endovascular approaches, further reducing perioperative trauma. These innovations offer patients quicker recovery times and a lower risk of complications compared to traditional «open» surgeries. However, there are still certain procedures where robotic or hybrid techniques are not yet widely adopted.

Given your extensive international experience, what are the key factors in ensuring patient safety and comfort during surgical procedures?

The key factors in ensuring patient safety and comfort during surgical procedures include:

- 1. Communication with the patient:** It is crucial to clearly inform patients about their treatment plan, potential complications, and expected outcomes. Ensuring that both patients and their families are well-informed helps alleviate anxiety and prepare them for what lies ahead.
- 2. Safety procedures:** Each member of the surgical team must know their roles and responsibilities. In the UK and the US, it is standard practice

A promotional banner for the Precision Health Summit 2024. The banner features a light blue background with a large, stylized hexagonal graphic on the right side. Inside the hexagon, there are various data visualizations including a line graph, a bar chart, and a pie chart, all in shades of blue and green. The text on the banner is as follows:

PRECISION HEALTH SUMMIT 2024

Revolutionizing Healthcare with Precision Medicine


October 9 - 10, 2024

Presented by **LifeNome**

Powered by **1BusinessWorld**

2024 Precision Health Summit

Event by **1BusinessWorld**

 Oct 9, 2024, 3:00 PM
Oct 10, 2024, 11:30 PM CEST

for all team members to introduce themselves before the operation and discuss their specific functions, potential deviations from standard techniques, and related equipment needs. A perioperative checklist is used to confirm that all necessary steps have been completed before anesthesia, incision, and the patient's departure from the operating room. After the procedure, the team reviews the surgery's course, discusses any issues encountered, and how they were resolved.

3. Clear assignment of functions: Clearly defined roles and responsibilities prevent confusion and ensure smooth operations, especially in urgent situations.

4. Appropriate equipment: Equipment should be selected according to the surgeon's preferences, be in perfect working condition, and operated by well-trained personnel.

5. Regular audits: Ongoing evaluation of procedures, treatment outcomes, hospitalization duration, and adherence to safety protocols is essential. This includes monitoring the use of protective materials and other safety measures.

6. Training rooms: Practice and training are vital. Hospitals typically have dedicated spaces where surgeons can refine their skills using simulations or special models, minimizing the need for learning during actual surgeries.

7. Mentoring: Experienced doctors mentor younger colleagues, ensuring continuous education and skill development. This knowledge transfer enhances the safety and effectiveness of treatments.

Taking into account the dynamic development of transplantology in Poland, what are the key challenges and future directions of research in the field of organ transplantation?

Transplantology is one of the fastest-growing medical fields in Poland, alongside robotics. Progress in this area includes the adoption of minimally invasive and robotic techniques for organ retrieval from living donors, reducing donor discomfort and procedural risks. Additionally, the use of machines

for hypothermic mechanical perfusion of kidneys extends storage time and improves post-transplant function. Similar technology is being explored for liver perfusion, allowing even high-risk livers to be prepared for transplantation.

Xenotransplantation, involving organs from genetically modified animals, is another research frontier. While recent cases, including heart and kidney transplants from genetically modified pigs, have not yet achieved long-term survival, they offer valuable insights into organ function in humans. Experiments, such as those conducted in China, where pig livers are transplanted into brain-dead patients, aim to address challenges like zoonotic virus transmission.

Xenotransplantation holds promise as a bridge therapy or even a long-term solution, potentially freeing patients from the constraints of waiting for human organs or undergoing replacement therapies like dialysis, which significantly impact quality of life.

Looking ahead, what are your goals in terms of research and clinical practice?

My goal is to integrate the experience I have gained in the United States and Great Britain into the Polish healthcare system. Together with my colleagues at the newly opened University Clinical Hospital in Poznań, we aim to establish a modern surgical center. This center will offer comprehensive surgical treatments, with a particular focus on diseases of the pancreas, liver, and bile ducts, including transplantation.

We plan to develop exchange and international cooperation programs that will also be available to students, ensuring that our patients are cared for by professionals who are well-versed in the latest medical advancements.

Poland has many outstanding specialists, but it is crucial to continue educating the next generation of experts. Education and professional development are fundamental to the future of medicine in our country. Therefore, we plan to emphasize continuous skill and knowledge improvement, providing the best possible care for our patients.


Thank you for reading this issue!
Stay tuned for more content in our next edition.

If you want to advertise a clinic or a medtech company, or if you need contact information from our network, these options will be available soon as paid services.

Please write to us at **mformedics@gmail.com** for further details.

EDITOR IN CHIEF: MAGDALENA KUCHARSKA

GRAPHIC DESIGN: MARIA SAMOKHODSKA

 <https://www.behance.net/sam369hod>

