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ISSUE HIGHLIGHTS

Thoughts on the 150th anniversary of the the Faculty of Medicine

New stories, new perspectives from young minds

Interview with Dr. Akl Fahed

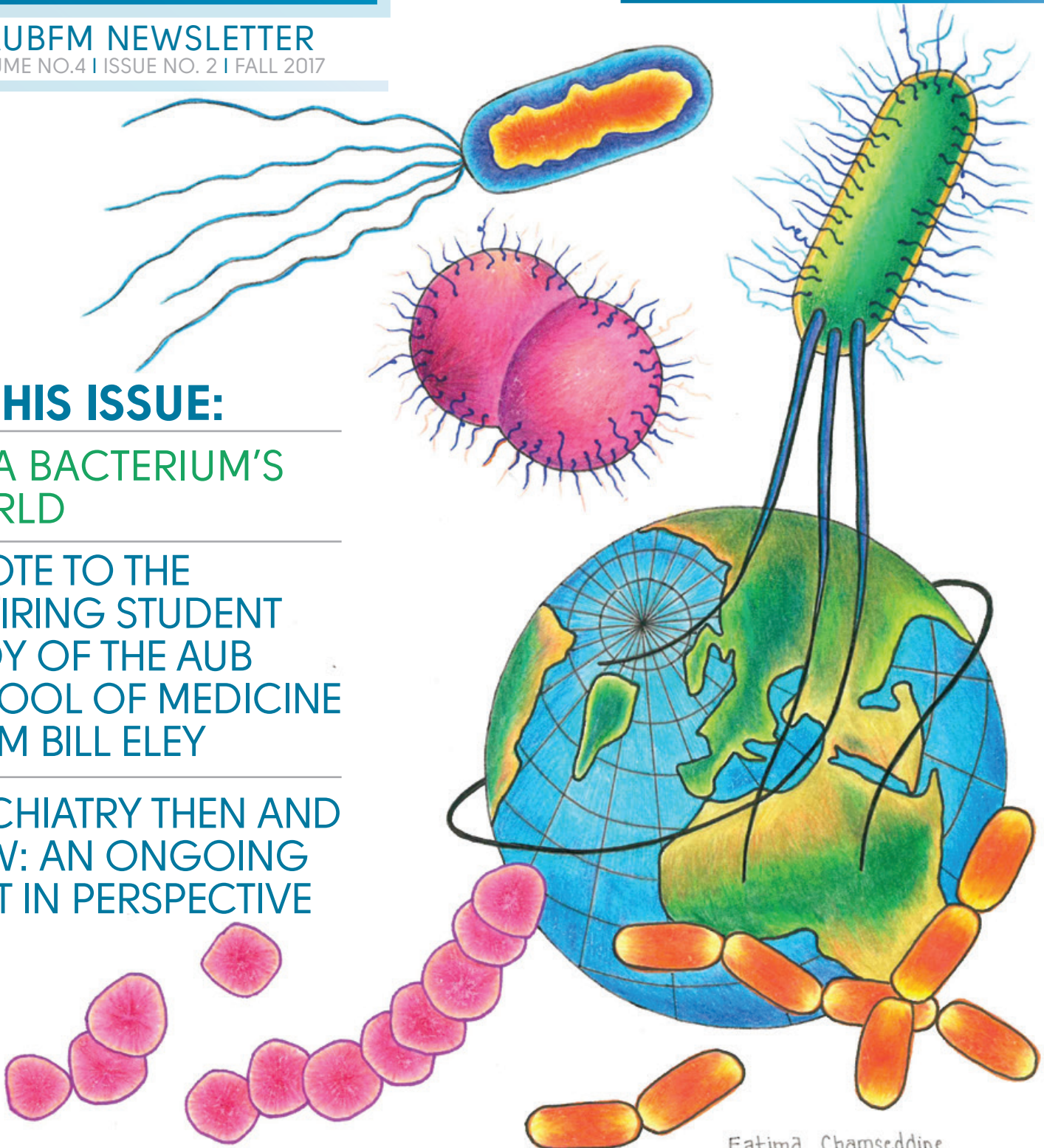
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It has been both a great honor and responsibility to serve as Editor in Chief of this prestigious newsletter of AUBFM. I hope we were able to do a great job in improving the newsletter further and directing it to reflect all different aspects our faculty encompasses.

The success of our newsletter not only depends on the committed board, but also our advisors, contributors, and staff. I would like to thank them all on behalf of the entire board and express our appreciation for their support! This year is a special one for our faculty as it marks its 150th anniversary. Hopefully, it will be a very special one for Radioactive as well.

I would like to take this opportunity to invite all staff, contributing authors, and readers to provide me with any comments or suggestions on ways to further improve our newsletter.

I look forward to see Radioactive grow!

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ON TURNING ONE HUNDRED AND FIFTY

Kamal F. Badr, MD

This message was written in April 2017.

For once in my life, I am glad I am late. I am glad I am late in submitting this article to Rawan, who has been very patient with me, because it gave me a chance to attend last night's "Pop Talk", the latest brain child of Thalia Arawi, an event which brings out the human in all of us. I heard personal testimonies by a "just-admitted" pre-med student, by students from each of our four years, an intern, a senior resident, and two attending physicians. Without exception, these 'from the heart' testimonies were captivating, highly insightful, entertaining, and exceptionally well-delivered.

Where does one find such a concentration of highly talented and passionately driven individuals who have nevertheless chosen to spend their lives in a profession which remains at core one of dedication to the good of others? One finds such a unique group here at the Faculty of Medicine at AUB, which celebrates its 150th birthday this year. And it is this that makes our work as faculty so precious and exciting: the opportunity to spend years accompanying the growth and the 'coming into fullness', of scores of the most gifted and accomplished young men and women of their generation. Our task is indeed 'awesome'!

The legacy we have been left by our founders and the generations that followed them is precious and needs to be protected. But this legacy of excellence was driven and energized by a persistent quest for higher goals and standards. Our ultimate responsibility as the current custodians of this legacy is to assure not only that standards are maintained, but that they are exceeded, again and again. This becomes a particularly weighty responsibility when we consider the quality of our students. Are we living up to it? Are we doing all we can? Is what we are doing for our students good enough?

The answer to all three questions should always be no. Whatever we are giving our students can and should never be "good enough". Those who come after us will judge with the sharp vision of hindsight whether what we are doing today was the best we could have done; so will the fruits of our graduates attest in part to how good a job we have performed in preparing them. But for us, we will always regard ourselves as falling short of what they deserve.

A thoughtful pre-med student who was admitted to Medicine I just two days ago wrote me today, bemoaning the fact that so many of her friends had been rejected: "Yesterday was tainted with numerous sad faces, the faces of some of whom I believe to be lost assets to the Faculty of Medicine." She goes on to suggest some changes in the admission process which would allow more emphasis on personal attributes than on MCAT scores and grade averages. But how do you assess whether a person would make a good doctor? Undoubtedly, our admission process is one area where we can always do better. We are committed to doing so.

Our curriculum has undergone a momentous change as of 2013, a change the impact of which has been palpable in so many ways, some measurable, others not. Overall, students are superior today in their maturity and personal growth as physicians, as well as in their altruistic and socially responsible attitudes and actions, while exceeding their predecessors on knowledge exams. Nevertheless, much more needs to be done, particularly in bringing the clinical years into better alignment with the goals of the new curriculum. This, in turn, requires that our clinical faculty undergo significant "existential" changes in their work habits and their teaching skills, which in turn necessitates major restructuring of faculty compensation schemes to move further away from individual efforts to group practices. These are tectonic changes that require much energy and time on the part of the leadership, but we are committed to pursuing their implementation. Our commitment is again driven by our firm belief that our students deserve ever more meaningful and substantial learning experiences with our superb faculty.

As with all changes that take place at medical schools, the fruits are reaped by those who come after. Such is the nature of the pace at which change occurs; change that is carefully and judiciously implemented; change which does not destroy all that was built before; meaningful and truly innovative change. We strive for such change, but the outcomes are never certain; only our fidelity to who we are is certain, and unshakeable.

After 150 years, we will be judged by our fruits, for "By their fruits, you shall know them". In the year 2167, those who will read these lines will know for certain how well we have done. May their judgement be pleasing to our Good Maker.

A NOTE TO THE INSPIRING STUDENT BODY OF THE AUB SCHOOL OF MEDICINE: FROM DR. BILL ELEY

Bill Eley, MD, MPH, Executive Associate Dean at Emory University School of Medicine

Over the last week I have been given the great gift of spending time with the faculty and students of AUB, and at the request of your student leadership, I offer a reflection on what I have observed. I am a medical oncologist and Dean of Medical Education at the Emory University School of Medicine in Atlanta, Georgia. Emory University and AUB School of Medicine have a longstanding relationship based on shared faculty and great respect for AUB graduates. President Khuri was Emory's former Chair of Hematology and Oncology and Executive Associate Dean of Research prior to his appointment at AUB. Dean and Executive Vice President, Mohamed Sayegh, and Professor of Neurology and Director of the Nehme and Therese Tohme Multiple Sclerosis Center, Dr. Samia Khoury visited Emory at the time that AUB was planning the new medical curricula. Dr. Badr is a former Emory faculty member. The ties between our two schools are strong.

I came to Lebanon holding the AUB School of Medicine in great respect, so I must confess to considerable pre-visit bias. I offer the following observations specific to the MD students of AUB:

The leadership, faculty, staff, and students of the University are inspired by a vision that urges AUB and Lebanon to be a leader in the world. The direction set by leaders emerges from dedication to noble efforts – the compassionate medical care of those in need, excellence in all our activities, and the care and nurturing of learners, both residents and students.

Medical students are deeply engaged in their own transformation to become healers, and even “extraordinary women and men”, in the words of President Khuri. My time with the students reinforced the struggle that I have observed among all good minded people who accept the mantle of responsibility associated with becoming a physician. AUB students, as well as students in the US and other countries, struggle with personal priorities, well-being, appropriate boundaries with patients and families, a loss of autonomy/self, an infinite amount of material to manage, facing mortality, etc. Of great importance, the AUB students who were well into their clinical education easily pointed to role models that they sought to emulate moving forward. To me, this is the greatest indication of an outstanding medical education. Finally, the students inspired me with their dedication to medicine, to the underserved, to social justice, their fellow students, their country, and to the problems facing the region and world. Our Emory students share the same amazing altruism. The commonality between medical students here and in Lebanon is to be celebrated, as within this congruence of motivation lies hope for all who suffer.

My meetings with the medical education team at AUB were equally fruitful. The challenges discussed between us were challenges that are spoken of with regularity worldwide – How can we continue to support our faculty as educators as the stresses of modern medicine pull them in multiple directions? How do we align our learners with the patients needed for their education? How do we increase flexibility in our educational structure to allow for students to meet their goals that often include a complicated and competitive path to residency? What traits/skills/habits/attitudes should we be measuring in our trainees, while making sure that we do not forget some attributes that may be the most important, and the least measurable? How do we prioritize what we are teaching and at what depth? How do we decide what not to teach? And how do we make our topics clinically relevant to the practice of medicine? I trust that some of our AUB students will be helping us solve these questions in the coming decades. You will be on faculty sooner than you think!

Finally, the gravity of the problems of the world were brought to the forefront of my mind during my visit. War, intolerance, displacement, and the suffering that result, were all “front of mind” in a country and University that is choosing to face these realities with bravery and commitment. I left Lebanon humbled by the deliberate and compassionate response to the world's most pressing problems.

This was my first trip to Lebanon. I have known about AUB and experienced the enormous kindness and “joie de vie” of Lebanese Americans for most of my adult life. My visit, however, exceeded my expectations in many ways – the ancient history of the country, the true diversity of the people, and the hospitality of the faculty, staff, and students were all extraordinary. I greatly appreciate the opportunity to spend time with the students, staff, faculty, and leadership. I wish you all the very best and hope that I have been of some help as a colleague in our important endeavors.

Until we meet again, respectfully submitted,
Bill Eley

LET THEM BE HEARD

Alaa Ousta, Med II

Thanks to the tremendous advancements in the medical field, children with disabilities such as Down Syndrome are able to lead healthy and normal lives. When provided with access to psychological and medical care for the multiple health conditions associated with trisomy 21, these children can significantly improve their duration and quality of life. Unfortunately, children with disabilities often face barriers rooted in social stigma that prevent them from receiving the care they require. Derogatory descriptions, like the term “Mongolian” and “retarded”, deceptively label such children as incapable of living normal lives due to their developmental delay.

In 1989, the United Nations organized a Convention on the Rights of the Child (CRC), the first of its kind to thoroughly deal with children’s rights. Article 23 of the Convention states that “Children who have any kind of disability have the right to special care and support, as well as all the rights in the Convention, so that they can live full and independent lives”. Unfortunately, when it comes to Lebanon, there are no explicitly outlined policies on the management of children with disabilities.

“When I first came to Lebanon from the States, I struggled because so many kids and families could barely afford medical care, let alone a supportive and inclusive education,” says Dr. Rose-Mary Boustany, the Director of AUBMC’s Special Kids Clinic and Neurogenetics Program (ASKN). “This has changed drastically over the last ten years with more insurance companies available, the government extending more health services, and the ministries of social services, education, and health trying to chip in. Still, healthcare and an integrated, inclusive education are not accessible to all, especially for children with special needs. Those kids are vulnerable and require additional specialized healthcare and services compared to neurotypical children. Speech therapy, applied behavioral therapy, and psychomotor therapy yet remain uncovered by insurance companies,” added Dr. Boustany.

Dr. Boustany’s experiences have led her to establish the ASKN program. The clinic has been able to provide special care to children with special needs, including physical, occupational, psychomotor, speech, feeding and many other therapies. Additionally, many nongovernmental organizations (NGO’s), such as Openminds and the Lebanese Down Syndrome Association, aim to provide funds for those who cannot afford such care, as well as support relevant research and increase the awareness and services for special needs children across their lifespan. However, and although NGOs may lessen the burden on families to a certain degree, this support remains insufficient in improving access to healthcare and special education programs without the support of governmental policies.

Children with disabilities are capable of greatness. Ashlee Nalls has Down Syndrome, but she was able to defy her doctor’s expectations by graduating from high school in Milwaukee and winning a contest for artists with disabilities. Maysoon Zayid, a Palestinian Muslim woman in New Jersey with cerebral palsy, is currently a successful stand-up comedian. Nour is a Lebanese young woman with Down Syndrome who, despite the challenges, able to manage a clothing shop on her own. When we hear of such success stories, we tend to think: It must have been hard to succeed with such disabilities. It’s about time that awareness and understanding spread to change our reactions into: It must have been hard to succeed with such unfair health policies and stereotypes.

Children with disabilities have the right to a fair chance at their dreams. We must help disabled children and young adults live their lives with fewer obstacles, better access to healthcare, specialized education and equal job opportunities. Despite the progress we have made, we still have a long way to go in providing care and services to this population and doing away with stereotypes, especially as future medical doctors.



Fatima Chamseddine

PSYCHIATRY THEN AND NOW: AN ONGOING SHIFT IN PERSPECTIVE

Lara Wadi, *Med III*

Throughout time, physicians have been preoccupied with the study of the “insane” while society has coped with individuals who experienced mental illnesses through different means. History has witnessed a shift in the understanding and attitude towards mental illness that has gradually led to the emergence of the ethically-charged psychiatry field that we are familiar with today.

Since the Middle-Ages, cities have organized institutions to accommodate the “homeless psychotics”, including hospitals, jails, and asylums, with no therapy delivered. Individuals with mental illnesses, often accused of demonic possession, were considered a source of public amusement, and accordingly, they were locked away in what was then referred to as “madhouses.” No one ever expected to observe an actual improvement in the mental abilities of these individuals; the mentally ill were often abandoned. The concept of asylums was revolutionized in the 18th century with the pioneering efforts of certain physicians such as Philippe Pinel, who introduced the idea of “moral therapy.” Institutions finally had the aim of making the ill feel better rather than simply serving as confinements.

With the advent of medical therapy, a notion of curability emerged accompanied by a new wave of physicians carrying a more optimistic and humane perspective towards mental illness. The availability of new medications allowed some of the afflicted individuals to regain functionality within society and reduce the need for incarceration. Moreover, the use of the scientific method in approaching the illnesses resulted in the demystification of mental diseases and the exoneration of those affected. By the end of the 20th century, the psychiatric field became subjected to the fundamental principles of medical ethics; namely beneficence, non-maleficence, autonomy and justice, with which respectful, confidential and non-condemnatory attitudes from the care-providers ensued. Patients with psychiatric disorders were to be treated like any other patient with a physical condition; they became worthy of a clinical encounter. No matter how severe the behavioral deviation from the norm, the medical team – gradually growing to include physicians, psychologists, nurses, and social workers – made sure to listen to their stories; the mentally ill finally had their voices heard. This shift in focus eventually influenced global health organizations and mental health became an essential element in the definition of “Health”.

Looking back, it is now evident that the field of psychiatry has come a long way from the atrocities of the “madhouse” era. Yet, this does not mean that the road has come to an end: controversial situations are faced in the psychiatric field and form the heart of ethical debates today. For instance, despite the advanced medical understanding of mental illness and its more humane practices, stigma is rampant. Literature has repeatedly demonstrated that stigma continues to be the main barrier to the seeking and delivery of mental healthcare. In wondering where the negative attitudes may arise from, a possible explanation could be that they are the mere remnants or reflections of the historical superstitions and fears, often attributable to ignorance. Another debatable source is the psychiatric label. In daily practice, the DSM has provided physicians with lists of criteria that allow for a classification of patients under certain diagnostic umbrellas. A recent debate in the *BMJ* by Callard et al. (2013) has elicited the question of psychiatric labeling with the view that it would “disable” rather than “enable” patients seeking care. In fact, giving a name to a condition has been found to disempower those with mental illness by increasing “diagnostic overshadowing” (whereby a person’s symptoms may be erroneously attributed to the psychiatric diagnosis), prolonging institutionalization, and decreasing the threshold of legal capacity deprivation. It comes as no surprise that these individuals may be hindered in their social functioning due to self-depreciation. Furthermore, Neauport et al. (2012) found that psychiatric labeling even affected medical resident’s attitudes towards the mentally ill, making them less at ease with becoming the individual’s next-door neighbor or work colleague. In response, a recent movement protesting psychiatric labeling is rising with an emphasis made on the need to provide comfort to the ill without making their social status worse than it already is. Several non-governmental organizations have also tackled the issue of stigma against mental illness in the hope of building a more sensitive and supportive environment to alleviate some of the social burdens associated with psychiatric disease.

Throughout history, communities have adopted different perspectives in dealing with mental illness. To a great extent, such a fact had great implications on the outcome and health status of those affected, and it continues to do so to date. Despite the availability of more humane therapeutic means with the advent of the science-based field of psychiatry, controversial medical practices and societal misconceptions are pervasive. With our current ethical framework in hand, more questions are arising, calling for a reevaluation of modern-day practices, with an emphasis on awareness of the community at large – a major determining factor in health outcomes.

References:

- Callard, Felicity, et al. “Has psychiatric diagnosis labeled rather than enabled patients?” *British Medical Journal* 347 (2013)
- Neauport, Audrey, et al. “Effects of a psychiatric label on medical residents’ attitudes.” *International Journal of Social Psychiatry* 58.5 (2012): 485-487.

OUT LOUD!

Q IN YOUR OPINION, HOW DOES A PSYCHIATRIC DIAGNOSIS AFFECT THE PATIENT'S MENTAL HEALTH IMPROVEMENT AND/OR FUNCTIONING IN SOCIETY?

A



“The situation won't improve by changing the name of an illness to make it sound more “acceptable”. It only improves when society is aware of these conditions and understands the enormous impact it has on mental health.”

Talar Televizian, Med III

A



“I believe that psychiatric diagnosis is a double-edged sword. On one hand, individuals begin to understand the constellation of symptoms they may have experienced within a therapeutic point of view. On the other hand, these individuals may face hardships from their surroundings due to the expectations of the “burden” of mental illness.”

Ahmad Abou Mohammad, Med III

A



“Upon the diagnosis with a mental disorder, one might develop a sense of belonging to a population sharing similar sufferings, healing the aftermaths of alienation and providing a sense of relief. On the other hand, the revelation might distort a person's reality, shattering every sense of self and causing a simmering revolution against respective connotation.”

Sarah Boureslan, Med II

TRUMPING IMMIGRATION: ARAB IMGs' UNCERTAIN FUTURE

Khalil Baddour, Med II

The following information is valid as of March 20th 2017.

On January 27, 2017, the United States of America and the entire world were shocked by President Trump's Executive Order that placed a ban on immigration from seven Muslim-majority countries. The ban, signed-in by Mr. Trump, immediately barred admissions of anyone coming in from Iraq, Iran, Libya, Somalia, Sudan, Syria, and Yemen for 90 days- with the entry of refugees from Syria blocked indefinitely.

In its first draft, the Order did not exclude legal green card and dual nationality holders from the consequences, causing chaos and panic throughout US airports for the days that followed. Families were torn apart. Hard-working immigrants could not attend to their jobs and provide for their loved ones. But worst of all, people by the tens of thousands, faced unnecessary segregation and racial profiling simply on the account of their nationality and religion.

Another casualty of Mr. Trump's Order was the American healthcare industry, which depends on the indispensable service of International Medical Graduates (IMGs), including graduates from the countries concerned by the ban. In 2015, the Educational Commission for Foreign Medical Graduates (ECFMG) reported that 24% of physicians practicing in the US are IMGs. The Robert Graham Center also presented a data analysis highlighting that residents from the seven banned nations represent 5.7% of all IMGs in 2015. This number, already sizable in and of itself, could only increase with the projection to add new countries to the list.

Not only do these graduates represent an important portion of the physician workforce, but they also take the jobs that Americans otherwise do not want. If not for IMGs, a large number of these positions would remain unfilled, causing health disparities between rural and urban America. Furthermore, IMGs are, for the most part, admitted on J-1 visa, which require clinicians to return home for two years after completing their training or seek waivers, namely by taking clinical jobs in underserved areas – which are labeled as such due to the lack of adequate healthcare services in them. They house the most vulnerable populations of America. If not for the high-quality physician care provided mostly by IMGs, these locations would suffer of an even more dire shortage of physicians and resources than is already present.

The medical community has already sensed the urgency of this matter. Many associations, including the American Medical Association (AMA) and the Association of American Medical Colleges (AAMC), have come out condemning the Order. They clearly outlined its deleterious impact on the nation's healthcare and patient care, and stressed the importance of cultural and geographical diversity in any educational process. However, with the Main Residency Match results looming and a need to ensure all spots are filled in their respective institutions, some residency program directors admit that they have resorted to ranking candidates based on their nationalities. This, to say the least, goes to show that the American government does not seem to consider the healthcare of its people as a priority.

Mr. Trump's Executive Order has triggered significant backlash. Many attorney generals from states such as Minnesota, Washington, Massachusetts, and New York have challenged the ban. In addition to this, in a move that is unusual for the judicial branch in terms of national security and immigration issues, federal judge James Robert of the Ninth Circuit Court of Appeals blocked the immigration ban, claiming it violates previous immigration laws, as well as citizens' constitutional rights. As a response to this, the Trump administration has issued a revised ban on Monday, March 6, 2017, with more legal basis and sparing Iraqi nationals. The response to this new Order echoes the previous one, with district judges in Hawaii and Maryland ruling to halt the 90-day ban.

Dr. William Pinsky, president and CEO of the ECFMG, has also addressed all applicants participating in the 2017 Match concerning the Order. In his message, he highlights the exemption of valid US visa holders as of March 16th 2017, or January 27th 2017 at 5:00 PM ET, as well as any permanent residents, dual nationality holders, or refugees already admitted to the United States, amongst others. He also provides guidance to nationals from the six concerned countries currently residing outside the US without a valid visa. Dr. Pinsky claimed that such individuals can resort to a case-by-case waiver of the suspension, on the basis of many reasons listed within the Executive Order that may be applicable to physicians seeking to enter the US to commence graduate medical education (GME).

The majority of medical students in the region will be following this issue very closely in the coming months. We do not know what the future holds in terms of immigration policies and visa issues for IMGs, and as such, we must prepare for any eventuality. However, the repercussions of Mr. Trump's ideology on the American people and citizens of all free nations are now clear to everyone. In a world where disease has no geographical boundaries and where nations can only strive through the exchange of products, knowledge, and manpower, Mr. Trump's "extreme vetting" does not impede terrorism, but instead only impedes our own advancement as a human race.

OUT LOUD!



WHAT IS YOUR PERSONAL TAKE ON THE RECENT US IMMIGRATIONS, POLICIES AND THEIR EFFECT ON IMGs?

A



“IMGs have always been an integral part of the US healthcare system and this is not going to change anytime soon. The new immigration policies will surely make it more difficult to hire IMGs but I doubt something will change in the near future.”

Ramez Kouzi, Med II

A



“These policies have placed unneeded strain on myself and my family, and will restrict me from realizing my full potential. I had spent months planning effortfully to intern in top US programs, only to reach the finish line and realize it has been moved (with the race possibly cancelled).”

Luma Rustom, Med IV

A



“I applaud the US for engaging in a humanitarian cause. They’re not allowing immigrants in because they want to save the rest of us from the perpetuating chaos.”

Jessica Atieh, Med II

IT'S A BACTERIUM'S WORLD

Karim Kozayha, *Med I*

We often associate bacteria with disease-causing germs. History is filled with tragic examples of microbial epidemics such as the black plague, tuberculosis, and cholera. However, by investigating the natural occurring bacteria within humans – the microbiome – scientists have identified their involvement in many useful aspects of our daily lives ranging from proper development of the immune system to neurological and psychological behaviors.

The state of symbiosis between us and bacteria has led some to posit many questions: Are we in command or are we merely hosts for bacteria? Are they only causative and exacerbating agents in diseases or can we use them to prevent or alter disease progression? Researchers are trying to tackle these questions by studying how our natural bacterial flora interacts with the different organisms it cohabitates with.

The most commonly investigated relationship is between the gut microbiome and the brain, suggesting that alterations in the microbiome may contribute to neuropsychiatric disorders. One example of how the gut microbiome affects normal brain functioning is by communicating with neurons and altering neurotransmitter levels. Recent studies confirm that indigenous spore forming bacteria play an important role in regulating serotonin production in enterochromaffin cells of the colon, which are cells responsible for producing more than 90% of peripheral serotonin¹. This hormone regulates a wide spectrum of functions from enteric motor and secretory reflexes to cardiac function and bone development. Subsequently, examination of germ-free mice revealed that low serotonin levels led to the development of several diseases including osteoporosis and cardiovascular problems. Scientists successfully reversed the serotonin deficiency and the accompanying excessive diseases by introducing normal gut microbiota in these germ-free mice. Today, it is well-understood that the overuse and over prescription of antibiotics is a main causative agent for the disruption of the natural microbiome. Mice exposure to long term antibiotics led to a depletion of gut bacteria and a disruption in processes crucial for memory formation such as physiologic serotonin levels, neural growth and neurogenesis.

Research on the link between microbiome and normal brain function raises the question of whether antibiotic use, notably during childhood, can possibly harm the developing brain. Probiotics may have the potential of treating brain-related diseases such as dementia, autism or Parkinson's disease. In fact, studies have recently traced Parkinson's disease to gut bacteria. Mazmanian and his team of researchers transplanted fecal samples from healthy individuals and Parkinson's patient into germ-free mice models of the brain disorder². The latter mice group performed worse on a series of motor skills' tests and presented brain damages similar to those seen in Parkinson's patients. Moreover, by altering brain neurochemistry, probiotics can potentially treat anxiety and depression-related disorders.

Dietary products can also alter the microbiome composition. By comparing the gut flora of mice on different diets: high-fat vs. normal, researchers at the Baylor College of Medicine found that *Lactobacillus reuteri* was greatly reduced in mice following a high-fat diet. They also correlated the behavioral and social deficits seen in these mice, which are similar to those present in autism spectrum disorders (ASDs), to the microbiome modification. Also, *L. Reuteri* was found to promote the production of oxytocin, the bonding hormone, which is found to be deficient in autistic humans. By restoring the normal gut flora and therefore oxytocin level, researchers were able to eliminate the social deficiencies in mice. This innovative approach treats neuro-developmental disorders with probiotics and avoids more orthodox methods such as the use of drugs or electrical stimulation.

The use of probiotics isn't limited to neuropsychiatric disorders; it covers a whole spectrum of treatment options from antidepressants to enhancing body odor. In fact, the bacterial ecosystem of one's underarms is responsible for giving sweat varying degrees of smell. Current dermatological studies are investigating the possibility of replacing foul-odor producing bacteria with less volatile bacteria extracted from another person's microbiome. In 16 of the 18 pairs of bacteria-exchanger tests, body odor improved within a month. Researchers hope to replicate this study and extend its applications to more severe skin conditions, such as psoriasis and eczema.

Interestingly, probiotics of *Lactobacillus rhamnosus* are being used to cure fatal peanut allergies in children. In fact, by restoring the missing bacteria in the patient's flora, researchers were able to end the peanut allergies within a year and a half with an 80% success rate.

More recently, studies in UCLA have shown that the anti-inflammatory properties of certain bacteria halt tumor progression, a turning point in our battle against cancer. Mice susceptible to ataxia telangiectasia, a neurological disease associated with a high incidence of leukemia, were given anti-inflammatory bacteria that effectively prevented the development of leukemia. Ultimately, a variety of treatments can be inspired from the use of probiotics to regulate the intestinal flora.

With the rising challenge of antibiotic-resistant bacteria, the use of probiotics is seen as a promising alternative to restore the balance of the gut flora and prevent infections. It may become possible one day to predict disease risk and design effective prevention strategies based on one's microbiota.

1. *Indigenous Bacteria from the Gut Microbiota Regulate Host Serotonin Biosynthesis Cell, Volume 161, Issue 2, Pages 264-276* Jessica M. Yano, Kristie Yu, Gregory P. Donaldson, Gauri G. Shastri, Phoebe Ann, Liang Ma, Cathryn R. Nagler, Rustem F. Ismagilov, Sarkis K. Mazmanian, Elaine Y. Hsiao
2. *Mazmanian, Sarkis K. and Sampson, Timothy R. and Debelius, Justine W. and Thron, Taren and Janssen, Stefan and Shastri, Gauri G. and Ilhan, Esra and Challis, Collin and Schretter, Catherine E. and Rocha, Sandra and Gradinaru, Viviana and Chesselet, Marie-Francoise and Keshavarzian, Ali and Shannon, Kathleen M. and Krajmalnik-Brown, Rosa and Wittung-Stafshede, Pernilla and Knight, Rob (2016) Gut Microbiota Regulate Motor Deficits and Neuroinflammation in a Model of Parkinson's Disease. Cell, 167 (6). pp. 1469-1480. ISSN 0092-8674*

OUT LOUD!



WILL THE STUDY OF ONE'S MICROBIOME BE SOON USED TO TREAT OR EVEN DIAGNOSE A DISEASE?

A



“No is the short answer. Not soon at least. Although there had been a lot of work on the microbiome and its effects or relationship to health or disease, the whole area of the study of the microbiome remains less well defined, especially concerning the causality of disease.”

Ghassan Matar, MD

A

“This is very possible. A lot of research is now considering how the microbiome is affecting the susceptibility of individuals to a variety of diseases, and whether altering the composition of a person's microbiome can alter the course of a particular disease such as diabetes, depression, and obesity.”

Zeina Kanafani, MD



A



“Although a lot of research is being done to understand the microbiome and its effect on health, I suspect it will take a few more years before the microbiome is used to diagnose or treat diseases. In the area of infectious diseases, such developments might be reached earlier however.”

Souha Kanj Sharara, MD

LOSS OF DETACHMENT

Sara Mourani, Med I

By definition, "Cachexia is muscle weakness, in addition to fatigue and loss of appetite that presents itself at the later stages of a chronic disease (for instance, cancer). It is also known as the wasting syndrome."

I was introduced to the term "cachexia," typed in bold on the Power Point slide of our first lecture on neoplasia. The term caught my attention from the first moment for several reasons. On the one hand, the term itself looked quite alien due to its bizarre spelling; it also felt odd to the tongue. On the other, the term had me perplexed by its abstractness: What does a person look like when he is wasting away?

In retrospect, my fascination with the word seems to have been a foreshadowing.

A couple of days after that very lecture, I was sitting outside the library on a cool, cloudless day, basking in the sun. When I received a call from my mother. A family member of mine was being admitted to the hospital due to his cancer. He was not well, and I needed to go check on him.

I crossed the road to the hospital and went up the crowded elevator. Right as I was coming out, I ran into my relative who was waiting in front of the elevators to be taken to his room. His back was to me. He was in a wheelchair, and as I went closer to him to greet him, my blood went cold. He was pale and had lost so much weight. But what had really changed were the muscles on his face; they looked so loose, as if they had been draped onto his cheeks and were hanging precariously. His eyes stood out starkly against their hollow sockets. The most vivid recollection I have from that encounter was how instantaneously, as I first gazed into my loved one's face, I thought, cachexia.

It was by this morbid coincidence that I understood what a human looks like when he/ she is wasting away.

That moment still haunts me. Not just from the point of view of a person whose loved one is sick, but as a future physician. This was a moment where my academic learning and my private life coalesced into pure insight.

Indeed, this experience has shaped my medical learning. Even now, on rainy Sundays spent at home, lazily shuffling through pages of my textbook, the abstract diseases and syndromes I encounter have a new vividness and are now rooted in reality. The printed words staring back at me, I now realize, shape a person's body, their personalities and their loved ones to extents that we, as first year medical students, don't appreciate yet. My relative is a brilliant man with a sharp wit and a kind and gentle demeanor. But with his current body, his whole persona has been affected.

One quiet night soon after that fateful day, I gave myself some time to process my thoughts and came up with a name for what I had experienced: it was a "loss of detachment." Some may argue that detachment is essential to deal with the emotionally taxing situations we will be exposed to everyday as physicians. Nevertheless, as a student, I believe it was important for me to get a taste, before any clinical exposure, of what I could be dealing with in the future.

Of course, these heavy thoughts don't constantly plague me during my studies. Long hours spent at the library cramming lectures do not leave much time for intense philosophical musings on the contents of my lecture slides. My life as a student is still as casual as it was prior to the encounter. But every now and then, during late quiet nights that are fertile grounds for deep thought, looking down onto the text of my lectures, the enlightenment emerges from the mental fog. It's during those moments, when I experience this loss of detachment, that I feel the filter of bliss and ignorance lifted from my eyes, and I get a glimpse of the terrifying responsibility that lies ahead.



JUST HOW (UN)HEALTHY ARE WE?

Hussam Aridi, Med IV

According to the World Health Organization (WHO) data published in 2014, cardiovascular disease (CVD) is the number one cause of death in Lebanon, with coronary artery disease in Lebanon accounting for 34% of the total deaths. Data from AUB, conducted by Isma'eel H. et al, has mirrored international data and has highlighted 6 risk factors that play a significant role in the high CVD burden: smoking, physical inactivity, obesity, hypertension, diabetes mellitus, and dyslipidemia. Alarmingly, more than 2/3 of the individuals studied in Lebanon had 3 or more risk factors for poor CV health (refer to figure). The most commonly implicated risk factors were physical inactivity, obesity, and smoking. So how do these risk factors affect CVD, and more importantly, what can we do about them?

Obesity

Tackling obesity is proving to be a challenging issue. Data from a recent Harvard school of Public Health study has indicated that even when healthy food options (fruits and vegetables) are provided, there is a minimal reduction in weight (0.2 and 0.1 kilograms every 4 years, respectively) and an insignificant change in the overall CV risk profile. Efforts have therefore shifted to preventive measures implemented at an early age. For example, the introduction of weekly health and cooking sessions into school curricula has been tested and proven to be effective by some Scandinavian countries. Such classes introduce the concept of a healthy diet and healthy food ingredients at an early age. AUB has also started making positive changes towards this goal. They are currently piloting a healthier selection of snacks and sandwiches in vending machines (one of which is located next to the ER entrance). Another project includes a 2 hour culinary class for fourth year medical students as part of the family medicine rotation.

In cases of obesity that are refractory to dietary changes, bariatric surgeries are proving to be a very effective option. Bariatric Surgery: A Review And A Meta-Analysis in 2008 showed positive outcomes on the long-term in terms of maintaining weight loss (90% of cases) and in reducing diabetes, blood pressure, stable angina, and heart failure incidence.

Physical Activity

In a study about CVD risk factors in Lebanon, Isma'eel H et al. 2016 found that almost 90% of the Lebanese population does not meet the physical activity standard of 30 minutes of exercise for 5 days/week set by the European Society of Cardiology. Awareness campaigns that educate people about the minimum required exercise is an important first step in getting people to shake a leg! Interestingly enough, the role of wearable technology devices in weight reduction is still a matter of debate. A recent article in JAMA has shown that such devices resulted in less weight loss 3.5 kg in 24 months when devices were used vs 5.9 kg in 24 months when they were not used) when compared to control groups that did not use them. Although there is no final consensus about the role of such devices in weight reduction, it will definitely be an issue worth noting if we plan to engage our younger generation.

Accessibility to public exercise space is also important to encourage more physically active lifestyles. Enforcing regulations to add more sidewalks for walking and running, more bike lanes to promote the use of bikes over cars, and more sports courts is crucial to create a safe space for exercise. Unfortunately, Lebanon lacks such public spaces, but there is hope. Beirut has gotten its prototype bike lane as of April 20th, 2017.

Smoking

After years of research and lobbying, a smoking regulation that banned smoking in closed public areas was passed in Lebanon in 2012. The law was a step in the right direction; however it was not enforced properly. Educating both the lawmakers and the public about the dangers of smoking is essential to help smokers quit. Furthermore, more emphasis should be placed on educating consumers about the health risks associated with passive smoking.

Some programs exist that cater towards smoking cessation. For example, AUB launched a smoking cessation program in 2015 that includes individual sessions with a physician, behavioral group counseling sessions, dietitian consultations, and a yearlong follow-up plan.

CVD places an immense financial load on our already overburdened health care system. Combating CVD at its root causes is essential to improving public health, not just by decreasing its incidence, but by freeing up resources that could go towards other patients. The very high prevalence of CVD risk factors in our population means that action must be taken-but it also means that small steps in raising awareness and increasing prevention will have tremendous repercussions. Instead of losing hope by the high prevalence of CVD risk factors in our population we should be buoyed by it. Taking action will have vast measurable benefits in Lebanon.

THE ROLE OF TEXTBOOKS IN MEDICAL EDUCATION TODAY

Lama Assi, Med II

In the Winter 2016 Radioactive issue, President Fadlo Khuri advised medical students to: “Read, read and read some more”. Likewise, many professors start their lectures with a book reference, expecting us to supplement the lecture slides with information from textbooks. But how many students are actually reading these textbooks?

Almost no medical student I know owns a copy of Harrison’s Principles of Internal Medicine, the “bible” of internal medicine. Rather, most of us will rush to get the latest edition of First Aid or flip through the best notes from previous medical students that have been handed down. For a long time, medical textbooks were the students’ primary source of medical knowledge. Today, however, walk around the library and you will find most students glued to their screens, going over lecture slides or watching online videos explaining the material. Some even study straight from review books and question banks, and fill the gaps with a quick Google search.

Technological advancements and endless access to information have increased the pace of our daily lives, pushing us to try and consume as much information as possible in the shortest amount of time. And this does not only apply to our education; rather, we are increasingly relying on short videos and infographics to understand complicated topics related to politics, economics, and science.

The ease with which we can access medical information has allowed us as medical students to find and read up on select topics much faster than previously possible. As a result, it is now easier to dedicate more time to community service and research opportunities. This has allowed the new generations of students to better develop their empathy, communication skills, and drive for innovation. These features go hand in hand with clinical competency and set the path for students to become well rounded physicians.

Also, these shortcuts are beneficial in providing non-traditional ways of learning. For some, practicing questions can be more beneficial than reading and re-reading textbooks. Animations are perfect for the visual and auditory learners. The availability of different kinds of learning sources, with textbooks as one of them, gives students the ability to curate which combination of sources allows them to learn best.

However, the problem with slides, animations, and review books isn’t that they are not good sources of information or good learning tools, but that they are designed to prepare you for multiple choice question exams without providing the full spectrum of information. The high-yield points that they contain often do not coincide with the high-yield information that is needed for clinical practice. By relying on them as the sole source of knowledge, students are missing out on a lot of concepts that they will need as physicians.

Apart from the more comprehensive information, reading gives you the language and vocabulary to discuss medical topics fluently. When asked to define the Frank-Starling mechanism in Clinical Skills once, we all replied in unison: “more in, more out.” We were simply repeating the over-simplified sentence from our lecture slides, and we didn’t realize how absurd it was until we saw the funny look on the instructor’s face. While the concept was clear in our heads, we were unable to formulate a clear explanation for it using the proper medical lexicon.

It is difficult to have students go back to studying primarily from bulky textbooks. Instead of insisting that they do, we must work on making medical textbooks less intimidating. We need “First Aid” versions of the “Harrison’s”: clear and concise sources of high-yield information from a clinician’s, and not a test-solver’s, point of view. Although these books already may exist as small handbooks, they are not typically used or advertised as medical textbooks.

Unless, and until, that shift is made, students will most likely continue relying on other sources of learning. However, students shouldn’t have to lose medical knowledge because of their decreased use of textbooks. If modernizing the medical textbook is not an option, then perhaps we can start accepting videos, animations, review books and others as real alternatives to the classical textbook and work instead on making their content more comprehensive and complete. Ultimately, we need to develop new learning resources that satisfy both the students’ need for conciseness and the learning objectives of the medical school curriculum.

OUT LOUD!

Q WITH THE INCREASING AVAILABILITY AND GROWING POPULARITY OF ALTERNATIVE LEARNING RESOURCES, WHAT DO YOU THINK IS THE ROLE OF CLASSICAL TEXTBOOKS IN MEDICAL EDUCATION TODAY?

A



“Alternative resources may be richer in information than any textbook; however, they often lack consistency and structure. Textbooks will never become obsolete in medicine since they effectively present the information we need in a way that flows pleasantly; it’s almost like reading a story.”

Mohamed El Moheb, Med II

A

“Textbooks lay out a logical, well thought-out explanation of the material. They provide the novice with a well-painted picture that is comprehensive and coherent, as opposed to the snippets of information provided by review resources. This helps the student comprehend the topic on initial encounter.”

Ramzi Sabra, MD



A



“My main concern while studying is time effectiveness. With videos, I am able to speed them up to Eminem’s word count per second. A slower paced studying using textbooks will make me more prone to distractions. I love books; however, with the limited time available, they can’t be utilized as a primary resource.”

Joy Badawi, Med II

INTERVIEW WITH DR. AKL FAHED

Akl Fahed, MD, MPH is a cardiology fellow at the Massachusetts General Hospital, and a scientist with expertise in cardiovascular genetics at Harvard. He previously completed a postdoc research fellowship in genetics at Harvard Medical School, a Master in Public Health (Quantitative Methods) at Harvard T. H. Chan School of Public Health, and residency in Internal Medicine at the Massachusetts General Hospital. He is currently president of the WAAAUB New England Chapter and leads multiple initiatives within the AUB alumni community in North America.



Q: What is the biggest difficulty you have faced throughout your move from AUB abroad?

A: I moved from AUB to a large research lab where postdocs with several years of full-time research experience (e.g. PhD) work on their projects independently. You would meet with the mentors and present your work to the lab once every few months, and your progress is judged accordingly. That was new to me, and I did not have the same background, so it was a bit of a challenge!

Q: Was the move worth it? Do you consider coming back? What do you miss most here?

A: Yes and yes. I miss my family and the sense of having roots in a place.

Q: Where do we stand in regards to students abroad? Do you think we have the right preparations?

A: I first joined AUB at a time when John Waterbury was president, and I still remember his words on the AUB education, "It's not what you know; it's how you think!" AUB instills in us the ability to be creative and look beyond the horizon. In today's changing world that depends on critical thinking more than knowledge. I believe we are very well equipped to compete. In my work with WAAAUB in North America, I am inspired every day by what our medical alumni have been achieving, dating to many decades before me.

Q: Is there anything that you would have done differently?

A: The short answer is no. But in thinking about it, I might have chosen an analytical major for my pre-med education such as mathematics, computer science, or engineering. In my current research work in genomics and data sciences, coding skills are crucial and I had to struggle to learn late.

Q: What is your final goal?

A: To live a happy life, and I already achieved it. I truly don't believe that you should work and postpone gratification in life for a single, final goal. There is never one. I believe in being happy every day and contributing to the improvement of the world around you. You should always strive for that, but if you are not achieving it along the way, then you are doing something wrong.

Q: How did you decide on your specialty?

A: My favorite class in Med-2 was cardiovascular pathophysiology with Dr. Samir Alam. At the same time, I enjoyed conducting research on patients with inherited cardiac diseases. When I moved to Harvard, I worked with Dr. Christine Seidman, a world renowned physician-scientist in cardiology. Every Friday, I would take a break from the lab and go with her to clinic to care for patients with hypertrophic cardiomyopathy. She was an inspiration and a role model to me. So by the time I started my residency in internal medicine, I already knew that I will become a cardiologist. I think many of our decisions in medicine are shaped by our mentors and opportunities, so make sure you have the right mentors and get involved in as many projects as you can early on.

Q: How did you get the idea to start Research Day?

A: The idea was not really mine but that of two NOREs (national officers on research exchange) who came before me, Drs. Nadim El-Chakhtoura and Ama Sadaka. When I succeeded them for the job, I decided to move the Research Day forward on our agenda, and the support from the faculty and excitement from the students were extraordinary. We then started the Research Workshop, a year-long course to teach students research skills. I was privileged to work with an incredible team of student leaders who helped create a new movement of research awareness in the faculty. In addition to Nadim and Ama, I would like to mention Mohamad Dahrouj, Achraf Shamseddine, Bassel Nazha, and Rony Salloum. Our work created a cultural change for both our faculty and students in regards to research awareness, and I am glad to have been part of this movement.

Q: What advice would you like to give medical students at AUBMC?

A: First and most importantly, stick to your core values. As physicians, you can be the most skilled and knowledgeable upon graduation, but without values and professionalism, you won't make it. Second, get advice from people you trust and role models in the institution. They will advise you and help you develop your career. Third, be persistent and never give up. Even if people try putting you down or discouraging you, or you feel frustrated with your team, take every challenge as an opportunity. That is how you succeed.

Q: Which profession other than your own would you like to attempt?

A: Writer and Poet.

Q: Which profession other than your own would you never attempt?

A: Painter (artist). I have a terrible handwriting and I've been always bad at drawing or painting.

Q: What do you enjoy doing in your spare time?

A: I cook a lot, but I'm not sure how much of this is the necessity of living abroad! When not in the hospital or on my computer, I'm equally likely to be in a bar with friends, working out in the gym or strolling in the streets of Boston with my fiancée.

Q: What advice do you have for our medical students?

A: Be fearless, humble, and grateful. Give time to the things that make you happy.

SHARING IT! TOWARDS A MORE COLLABORATIVE CLINICAL ENCOUNTER

Sarah Farran, Med I

It is easy for physicians to revert to the classic approach of medicine, where they lead the decision-making process on behalf of the patient. Equipped with years of experience in the field, physicians are often a trustworthy authority in choosing the best course of treatment. However, this approach has been shown to decrease patient satisfaction, delay diagnoses, and reduce patient compliance⁽¹⁾. Moreover, evidence suggests a tendency for doctors to overestimate their ability to communicate, while their patients generally report dissatisfaction and a desire to be more engaged in the medical encounter⁽²⁾. Research on patient-physician interactions also shows that even the most established physicians can make erroneous inferences about their patients' preferences and values⁽³⁾. Thus, there is often a gap between patient expectations and their clinical experience.

Health professionals who seek to engage their patients in the decision-making process face challenges such as time constraints, as well as patients' understanding of medical concepts and willingness to engage as autonomous agents. The SHARE-IT application provides an alternative that integrates the personalized patient-centered approach with a practical, time-effective, and easy strategy that is applicable in any clinic.

The SHARE-IT application integrates evidence-based "GRADE" (the Grading of Recommendations Assessment, Development and Evaluation) summaries of guidelines and medical literature and presents them in a creative layout. The information presented is automatically updated according to novel research. The SHARE-IT platform is a program that can be used on a variety of devices, including tablets and smartphones, as a shared decision-making aid during the clinical encounter. The application is highly personalized and can be adapted to specific contexts, drawing from national guidelines.⁽¹⁾ It allows patients and physicians to assess the consequences of an intervention on dimensions that are important to the patient. Its distinctive feature is an interactive visual layout that allows doctors and patients to overview the clinical and practical outcomes of each decision. For example, it provides the consequences of treatment options on levels of exercise, emotional wellbeing and diet among other factors. SHARE-IT also offers statistics about the costs, adverse effects and success rates of different treatments. The shared decision would then be made according to the patient's specific health and lifestyle considerations. A prototype of the application for antithrombotic drugs found an increased satisfaction with the medical encounter and increased confidence in the decisions made. SHARE-IT provides patients with the required knowledge to make an informed decision.

It is imperative for patients to understand that health outcomes are not simply achieved and that they should be personalized according to what best suits each case. Uninformed patients, however, are not able to access and accurately evaluate different options. Traditional decision-making aids provide limited updated scientific evidence, are designed for use by patient independently, and have little impact on clinical decisions usually made by physicians⁽¹⁾. Fortunately, the medical field is evolving in favor of precision medicine and personalized solutions. Shared decision-making, mediated by tools like Option Grids, MAGICapp and SHARE-IT, leads the way towards a holistic medical practice with higher quality outcomes, increased compliance and increased patient satisfaction.

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SEVENTEEN SECONDS

Kamel Shibbani, PGYI Pediatrics

Seventeen seconds. That's how long it takes to run a match algorithm using the 2014 Main Resident Match data*. Imagine a person with their finger over a return button on a keyboard, with all applicant and program Rank Order List information plugged into an algorithm, it would take just 17 seconds to find out where every single applicant will match.

So why does the match exist to begin with?

The idea of the match was brought about as a result of necessity. Early in the 20th century, medical students were accepted into residency programs through a process that resembled any modern day job application; programs made asynchronous offers to medical students who had to accept or reject the offer without knowing what other opportunities would be extended to them in the future. This created two problems. The first problem was that students would not dare to reject offers from lower choice hospitals for fear of not receiving a later offer from a more desirable program. The second problem was that hospitals were becoming more aggressive in recruitment. Since hospitals wanted to recruit better candidates earlier, and since there were no rules governing when offers could be made, offers for residency were being made as early as the beginning of the third year – before medical students had any clinical experience and before they even knew what they wanted to specialize in.

To provide some level of control, an idea of using a centralized clearinghouse was proposed by the dean of students at the University of Chicago, F. J. Mullin. A clearinghouse is a third party that organizes the exchange of goods between two sides, in this case, the programs and medical students. And so, the National Resident Match Program was born. In essence, the NRMP's job was, and still is, to act as a middleman between students and residency programs to dictate when offers can be made and when they have to be accepted.

How does the match work?

The match currently uses the Boston Pool Algorithm to decide who matches the program and where is the best possible place that suits him/her. This algorithm is a deferred acceptance algorithm, meaning that hospitals will offer applicants positions starting at the top of each hospital's rank order list, and applicants are allowed to hold on to each acceptance until an offer from a higher ranked hospital is made to them. Put simply, if a student gets offered an acceptance from 10 hospitals, the student will be matched at the highest ranked hospital on his rank order list. The idea behind this method is to give priority to the applicants' preference of where they want to go over the hospitals' choice of who they want to recruit. Applicants should therefore always rank hospitals in the order of preference, and not the order in which they think they will realistically match. As a medical student, an older colleague once told me that you should rank your preferred program second because most people don't get their first choice. Needless to say, there is nothing true about that statement.

The who's who of the match

There are three entities represented in the match process: programs, applicants, and the NRMP. It is important to draw a distinction between the NRMP and the ERAS (electronic residency application system). The NRMP is the body that organizes the match, while the ERAS, the online portal through which you submit your application. While your interaction leading up to the match is with the ERAS, the ERAS has nothing to do with the match beyond making your application available to programs. Make sure you register for both the NRMP and the ERAS websites.

Useful Resources

The NRMP maintains meticulous records about previous match years that are made publically available. These analyzed data sets, called the "main residency match results", include information that is state specific, specialty specific, and applicant specific (International Medical Graduates (IMG) vs US-Grad). You will be able to use this information to get an idea about a variety of things including: which states are IMG friendly, which specialties are IMG friendly, average number of interviews offered for matched IMGs, average Step scores for different specialties for matched IMGs, and much more. The NRMP also includes program director surveys that you can read to get a better idea of what program directors are looking for in applicants.

All this data, and much more, is available at the following website:
<http://www.nrmp.org/match-data/nrmp-historical-reports/>

The match process is long, expensive, and exhausting, but it can also be a lot of fun. Understand it, prepare for it, and enjoy it!

BIOMIMICRY – HEALING WITH NATURE’S TOOLS

Raji Naamani, *Med II*

Biomimicry is a field that is developing on a sturdy, long-standing foundation built by nature. It involves the study of nature’s elements, systems, and processes, and the application of their organic principles to solve enigmatic human problems. Nature has been at work long before science began to develop into its modern form and, through generations of trial-and-error, it has provided us with a plethora of designs and an ecological standard for sustainability. Thus, it is to our benefit as a species and as inhabitants of Earth to emulate nature’s concepts. As Janine Benyus, a biologist and leading biomimicry author, has said, “[t]he more our world functions like the natural world, the more likely we are to endure on this home that is ours, but not ours alone”⁽¹⁾. In this discipline, as scientists and nature’s apprentices, we analyze our problems and ask, “How does nature solve this?” – we seek to learn from nature, rather than simply extract the resources it has to offer.

Examples of biomimicry at work are abundant, but some are obvious while others are hidden. Consider camouflage for instance; animals have been using the principle of camouflage long before armies used it⁽²⁾. Looking to the skies, we see that birds and bats have greatly influenced our notion of aircraft wing design. Back on the ground, another technologically significant example of biomimicry is solar power collection, with solar panels positioned to model the arrangement of plants’ leaves for optimal energy absorption and storage⁽³⁾.

Applications of biomimetics show great potential in the medical field, from the macro- to the nano-scale. X-ray radiography, for example, has been developed and improved after observing moth’s eyes and upgrading the design. To facilitate higher resolution imaging, modern instruments utilize a material dotted with small pyramid-shaped bumps to mimic the anti-reflective surface of moths’ eyes. In order to grow new tissues and organs, we may combine synthetic organic materials, such as nanopolymers, with versatile biological molecules⁽⁴⁾. Imagine creative modifications that allow non-living materials to converge on a target like cytokines do or respond to foreign material the way macrophages would.

Architecturally, nanotubes of carbon simultaneously show extreme strength, flexibility, and thermoelectric conductivity: properties that provide access to a multitude of potential applications, including use as structural scaffolds for bone formation. Furthermore, by coating their exterior surface with glycoproteins to mimic the mucinous coats of cells in vivo and embedding these coats with receptor molecules, we may create a nanostructure that is safe to living cells and directed to specific cell-types⁽⁵⁾. Polymers of DNA, on the other hand, may be designed in the form of a cage, with lipid moieties used to lock the cage in place, along with any molecules trapped within it⁽⁶⁾. These nanopolymers may be used as chemical biosensors, to detect and monitor local concentrations of nutrients and toxins, or even viral load. Nanopolymers are also ideal vector candidates for drug delivery or gene therapy, as recognized sequences or chemical environments could act as triggers of a specific structural change in the DNA cage that would then release its cargo.

The most recognized example of a nanotechnology surface has been inspired by sharkskin and branded Sharklet⁽⁷⁾. Sharkskin is covered with scales called denticles, which are rough microscopic arrangements of ridges and ravines in a distinguishable diamond pattern that prevent the settling of bacteria and impede microbial proliferation⁽⁷⁾. In practice, this plastic-based technology can be used as an effective antibacterial system in public areas – especially in hospitals, with the potential to minimize today’s rising number of antibiotic-resistant hospital-acquired infections.

Although the term “biomimicry” is relatively new, the subject is not. The science is a paradigm of practical biology, taking inspiration from nature to improve human designs. In the near future, our buildings could know what season it is and rotate, open, or close in response to light, wind, or rain. Our cities could maximize the available resources, and resemble forests with their sustainability. As personal biosensors monitor our nutrient levels and notify us of infections in real time, nanotubes could deliver rapid treatment to both common and rare diseases. Technology continues to advance, our curiosity continues to grow, and we find that we are slowly assimilating nature’s wisdom into effective tools for healing.

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“TOOT TOOT 3A BEIRUT”

Hiba Dagher, Med II

Chances are that you know at least one medical student who has travelled to attend an International Federation of Medical Students Association (IFMSA) conference abroad. The IFMSA consists of different member regions of medical students that hold their own annual regional conferences, one of which is the Eastern Mediterranean Region (EMR). This year, for the very first time, the EMR conference was held in Lebanon. An organizing committee of 51 medical students from across the country coordinated and worked tirelessly over the past year to make this conference the best it could be. The conference included over 110 IFMSA medical students and officials from neighboring Arab countries, Europe, and South America, who attended training sessions on topics and public health issues related to the theme of “Disaster and Crisis Management” over the course of a week. They also enjoyed a social program where they explored Lebanon’s historical sites, shared their food and culture in a National Food and Drinks party, and formed lasting friendships with colleagues from across the globe. One of the Egyptian participants commented, “The couple of days I spent in Lebanon were unforgettable. The EMR experience nurtured my thoughts and opened my eyes to new things. Everyone was so friendly and I absolutely loved everything about it. I’m definitely coming back.”

The EMR aims to link medical students together and provide trainings on topics that they might not have the opportunity to openly discuss in their own communities. Sarah Abou Alaiwi, the vice chair of the organizing committee and a Med 3 student at AUBMC, explained that the Capacity Training Sessions highlight important health issues our communities face and equip medical students with the skills and knowledge to train others in their home countries. They help medical students realize that their volunteer work in their individual country is contributing to the development and progress of the whole region. One of the larger events of the conference is the Project Fair, where different standing committees present projects they’ve done in their own countries. This multi-regional exchange of problems and solutions allows medical students to brainstorm and innovate together, learn from each other’s experiences and create ways to adapt health projects to their own communities, thus further expanding volunteer work and development.

The relevance of the theme to Lebanon’s current situation makes this EMR event even more special. Exchanging knowledge and experiences with Crisis Management from different countries that have varying public health issues not only encourages alternative ways of thinking, but also helps future medical practitioners provide more effective care in a region plagued by instability and conflict. Lastly, after years of being the guests, this EMR allowed Lebanese medical students to warmly welcome others into their own home country, and made sure that everyone in attendance left chanting: “Toot Toot 3a Beirut!”



الطب البديل: ما بين البديل الفعلي وهرطقة الصدفية

محمد الموسوي، طب سنة أولى

شهد العالم في الآونة الأخيرة طفرة نوعية في ما يعرف بالطب البديل. وقد لقي هذا المجال إستحساناً واسع النطاق من قبل السواد الأعظم من العامة التي جل ما يهملها من الطب هو الهدف القديم- الجديد ” الشفاء“. إذ سجلت الولايات المتحدة الأميركية إرتفاعاً ملحوظاً في نسبة المتوجهين للطرق البديلة ملامسة الـ50% في العام 2013 ومن المتوقع أن تعكس الصورة عينها في العالم العربي في ظل غياب الإحصائيات. وقد أسهم عجز الطب الحديث في تقديم إنجازات كبيرة و فعلية في مجال المعركة المستمرة مع الأمراض المستعصية كالسرطان في هز ثقة العامة بالطب التقليدي و علاجاته الكيميائية الملبئة بالآثار الجانبية السامة. ما ساعد في صعود أسهم الطب البديل الذي يسعى كما يروّج رواده إلى معالجة الإنسان جسداً وروحاً كوحدة متكاملة متناغمة غير منفصلة الأجزاء عن طريق أساليب شعبية قائمة على موارث تقليدية لا على أسس علمية واضحة لها. يطرح الطب البديل نفسه بديلاً فعلياً للطب الحديث الذي كما يتهمه دعاة المدرسة البديلة بأنه يكتفي بمعالجة العوارض والظواهر المرضية دون الإكتراث للبعد الإنساني و النفسي الذي يصبغ أي حالة مرضية.

لا يخفى على أحدهم التوتر الحاد الذي يشوب العلاقة بين الطب البديل والطب التقليدي الغربي. فكلاهما يسعى ليثبت تفوقه وأهميته كوسيلة للتداوي والطبابة والإستشفاء. ولطالما إتهم الطب البديل بنشر الهرطقات التي لا قيمة فعلية أو أسس بيولوجية لها خاصة أن السبل البديلة فشلت فشلاً ذريعاً في ميادين التجارب المخبرية في العقدين الأخيرين.

الطب البديل هو حصيلة مشاهدات وإستنتاجات لتجارب أو محاولات إستشفائية رسخت في المنظومات التقليدية للموروثات الشعبية لثقافات مختلفة غير أن هذا النهج لم يرتق إلى مضاف الوعي العلمي القائم على الحقائق المخبرية التجريبية. و يضم الطب البديل مروحة واسعة من الطقوس العلاجية والأنماط الإستشفائية إنطلاقاً من طب الأعشاب إلى الطب الصيني والحجامة مروراً باليوغا وسواها. رغم أالنجاحات الكبيرة التي سجلها الطب البديل، مصادفات ناجحة لا أسس أو قواعد علمية بيولوجية أو فيزيولوجية تفسرها أو تترجم نجاحها منطقياً لا تزال أساليبه الإستشفائية قائمة على المصادفات و الملاحظات المتراكمة في ظل غياب دراسات موضوعية ومنهجية تبحث في المعادلات الفيزيولوجية الكامنة وراء نجاحاتها فالأعشاب على سبيل المثال كانت ولا تزال المصدر الأول والأهم لاستخلاص الأدوية وقد يفسر هذا جزئياً الإستعمالات المتنوعة للأعشاب والخلاصات الطبيعية. إلا أن هذا العالم تحول إلى نوع من الإستغلال والغش عن طريق إختلاق ”الأدوية“ و”المستحضرات الطبيعية“ المتعددة الإستعمالات والتي تفتقد للحد الأدنى من الصلاحية التطبيقية والإستشفائية نظراً لعدم توفر المعلومات العلمية القائمة على دراسات واضحة وتجارب منطقية.

إن أبسط ما يفسر هذا التوجه الغريب للعامة نحو الطب البديل هو سعي الإنسان الدائم نحو الـ“ طلقة السحرية“ والـ“ ترياق العظيم“ الذي يقضي بشكل جذري على جل الأمراض المستعصية. غير أن من المستحيل على المدى المنظور أن نبلغ الوصفة السحرية للدوار السر للدواء السر الذي سيفني الأمراض كافة عن بكرة أبيها.

عن الصحة الرقمية ومجالات الإستفادة منها في لبنان

محمد شحور، طب سنة أولى

تحمل هاتفك الذكي لترد على الرسائل المرسله اليك على تطبيق الواتس أب، او لتشارك اصدقاءك صورك من رحلتك الأخيرة الى دبي، او حتّى لتتصّفح جريدتك الإلكترونية التي استبدلت بها تلك الورقية. بكبسة زر، أصبح بإمكانك ان تجد ما تريد، تشارك ما تريد، تقرأ عمّا تريد. تخيل السيناريو السابق نفسه، مع تطبيقه على صحّتك وعلاقتك مع الطبيب. تلك هي الصحة الرقمية.

في العام 2016، استثمر ما يقارب عشرة مليارات دولار في مجال الصحة الرقمية، بحسب تقرير صادر عن السليكون فالي. تتعدّد التطبيقات المتوفّرة. منها ما يتعلّق بالطبيب، ومنها ما يتعلّق بالمريض. هذه التطبيقات تهدف الى حل مشكلة معينة، او الى تسهيل اجراء معقد. فمثلاً، يمكنك ان تجد تطبيق يحدّد لك على الخريطة عناوين عيادات الأطباء، بحسب الاختصاص الذي تعتمده في محرّك البحث. وعلى نفس هذا التطبيق، يمكنك ان ترى المواعيد المتاحة، فتحجز موعداً سيذكرك به التطبيق قبل حلوله بيوم او اقل، على حسب الرغبة. وفي السياق نفسه، يتوفر تطبيق آخر، موجّه نحو الأطباء، يمكّن الطبيب الذي يعيش في اليمن او في سوريا، حيث لا تتوفّر بعض الموارد والخبرات الطبيّة بسبب الحرب، من التواصل عبر بث حي وتفاعل صوت و صورة مع اطباء في اي بقعة من الأرض بهدف اخذ الاستشارة او طلب المساعدة في تنفيذ العملية.

في لبنان، لا تزال مثل هذه التطبيقات شبه معدومة الانتشار والاستخدام. وفي هذا المجال، يسجّل للمركز الطبي في الجامعة الأميركية في بيروت دخولها في عالم الصّحة الرقمية عبر اعتمادها أحد اهم البرامج الصحية ”ابيك“. أمّا من حيث الإبداع، فلا تكاد تجد تطبيقاً مبتكراً واحداً يخرج من هنا، على الرغم من وجود العديد من المشاكل الصحية التي من الممكن ان يشكّل الإبداع الرقمي حلاً لها. فعلى سبيل المثال، تكثّر في لبنان بعض الأمراض المزمنة كالسكري وارتفاع الضغط، اضافة الى المشاكل الصحية التي يعاني منها اللاجئون. هكذا تكوّن هذه المشاكل ارضاً خصبة لريادبي الأعمال، المبرمجين، والمستثمرين اللبنانيين، لكي يخرجوا ببعض الحلول الرقمية المصمّمة على اساس حاجاتنا المحلية المبنية وفق سلوكياتنا الصحية، بدلاً من استنساخ التطبيقات التي لا تصلح هنا.

OBESITY IN THE MIDDLE EAST

Amr Al Abbas, Post-doctoral Research Fellow

"I'm as healthy as a horse, doctor!" exclaims your patient when you ask how he feels. But you remember that when you first checked his/ her vitals, blood pressure was high and body mass index (BMI) was well beyond the normal range. You go on with your interview- the patient frequently wiping sweat off his forehead, his/ her face a light shade of red, and all the while you notice the shortness of breath after every phrase. This is when the cognitive dissonance kicks in- the patient says he's healthy; he's taking no medications, but he's obviously sick. The kind of sickness he has is something a lot of people have. It's obesity.

In fact, obesity is a chronic disease that is increasing in prevalence in adults, adolescents, and children and is now considered to be a global epidemic. According to the World Health Organization (WHO), there are almost 500 million obese adults and around 42 million obese children under the age of five². In the United States alone, 35% of adults (almost 100 million people) and 17% of children are obese³. If we want to get technical, obesity is defined as having excess body fat. Body Mass Index (BMI) is a reliable, easy to measure parameter that has been found to be correlated with the percentage of body fat and body fat mass⁴. The WHO classifies those with a BMI of more than 30 kg/m² to be obese^{6,7}. The issue isn't just the fat, it is that obesity is associated with a significant increase in morbidity from diabetes mellitus (DM), hypertension (HTN), dyslipidemia (DL), heart disease (CAD), stroke, sleep apnea (OSA) and cancer, as well as an increase in mortality and healthcare expenditures⁸.

Obesity levels in some lower-income and transitional countries are as high as or higher than those reported by the United States and other developed countries, and those levels are increasing exponentially. This is especially true in the Middle East, where the scarce studies show an alarming rise in the prevalence of obesity and its burdens¹⁰. One major study examining the burden of CVD risk factors in the Middle East and North Africa and their association with dietary behaviors showed that wide variation existed among countries in regards to the prevalence of CVD risk factors such as obesity and other components of the metabolic syndrome – variation attributed to differences in lifestyle, occupation, and eating habits⁹. In particular, oil-rich countries such as Kuwait are experiencing increasing obesity levels, with over 40% of women considered obese⁹. Another study, conducted between 1994 and 2000, on obesity trends in Saudi Arabian children in general and adolescents in Jeddah in particular showed a marked increase in BMI for all age groups, especially for ages 10-16⁹. And finally, a review of studies in Saudi Arabia, Iran, and Kuwait noted an upward trend in childhood obesity compared to a decade ago, further underscoring the severity of the situation and the need for more extensive studies to ascertain the impact of obesity in the Middle East¹¹.

Lifestyle changes and exercise are a good first line approach for overweight patients. However, their efficacy as the sole treatment of obese patients is questionable where more aggressive interventions are warranted. In a lot of the heavier patients, it is becoming clear that surgery may be the best solution. Bariatric surgery is emerging as one of the most common procedures performed in the world, reaching around 340,000 procedures in 2011 alone¹². There are several options, such as restrictive or malabsorptive procedures that mediate weight loss available to patients. These procedures include roux-en-y gastric bypass (RYGB), single anastomosis gastric bypass (SAGB) and laparoscopic sleeve gastrectomy (LSG).

LSG is an operation where the part of the stomach that stores food is cut and removed to leave a small tube. It is emerging as one of the most commonly performed bariatric procedures owing to its technical ease, decreased risk of surgical complications and mineral and protein malnutrition compared to other procedures¹³. While some were skeptical at first, bariatric surgery has been proven to be an effective intervention in achieving sustained weight loss and resolving comorbidities associated with obesity, such as DM and HTN independent of weight loss, through poorly understood mechanisms¹⁴. It is especially effective when coupled with nutritional and dietary support, endocrine counselling and the involvement of multiple healthcare professionals, providing patients with holistic and continuing care in their fight against obesity.

We need to cooperate together as healthcare workers in conducting wide-reaching campaigns to educate the public regarding the dangers of being overweight, as well as providing alternative, healthy and affordable diets for the public. While surgery is effective, it's our duty as healthcare providers to take the necessary steps to inform people about the dangers of obesity and keep them from ever needing to undergo these procedures in the first place. So the next time your patient tells you he's as healthy as a horse, make sure he understands what being healthy really means.

References:

http://www.who.int/chp/chronic_disease_report/full_report.pdf

OUT LOUD!



WHAT IS THE MOST IMPORTANT STEP IN PREPARING THE PATIENT FOR BARIATRIC SURGERY?

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“It is managing expectations. Patients need to understand what they ought to expect in regards to their health and their weight loss step by step, ahead of the operation itself - otherwise you’ll get trouble with patient satisfaction later down the line.”

Tarek Fouani, Clinical Coordinator - Metabolic and Bariatric Surgery Unit

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“It is important to ask about the comorbidities the patient is currently dealing with. Managing these issues before the operation, such as helping them lose a little weight through a well balanced diet and exercise, helps patients undergo a safer surgery and ensures better outcomes in the long-run.”

Dina Al Khatib, Nurse - Bariatric and Metabolic Unit



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“Patients need to feel like they matter to you, and that you don’t degrade them by assuming the illness is their fault. You need to be their advocate, and you need to make them feel that you believe in them.”

Omar Chehab, MD - Postdoctoral Research Fellow



BEHIND THE WHITE COAT

What speciality other than your own would you have attempted?

Dr. Zeina Kanafani
(ID):
Gastroenterology

Samer Ghosn
(Dermatologi)
Only Dermatology

Mira Merashli
(Rheumatology):
Cardiology

Samir Akl
(Pediatric Surgeon):
Ophthalmology

Fadi Sawaya
(Cardiologist):
Cardiothoracic
Surgeon

Albert Hajj
(Urology):
Orthopedics

Faek Jamali
(General Surgery):
Radiation Oncology

Abdel Fattah
Masri
(Rheumatology):
Rheumatology

Assad Soweid
(GI):
Ophthalmology

Salah Zeineldine
(Pulmo) :
Radiation Oncology