

European Medical Students' Association

# EUROMEDS

**Introduction to Lifestyle Medicine (6-19)**

**Obesity & Weight Loss (20-30)**

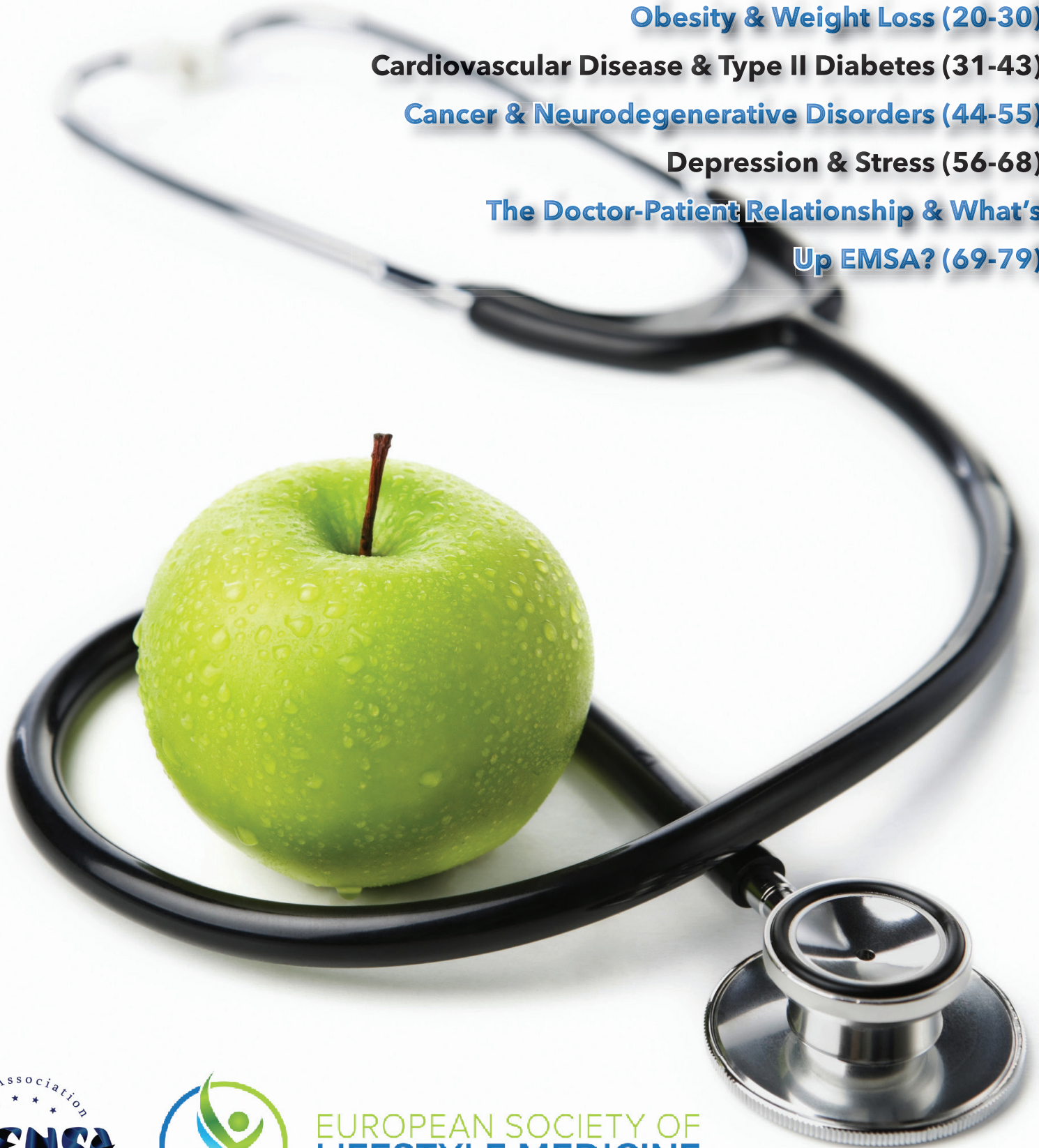
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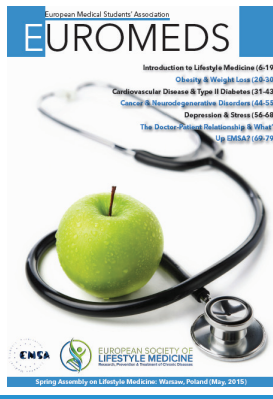
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**EUROPEAN SOCIETY OF  
LIFESTYLE MEDICINE**  
Research, Prevention & Treatment of Chronic Diseases

**Spring Assembly on Lifestyle Medicine: Warsaw, Poland (May, 2015)**



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# The Editor's Letter

Dear all,

The academic year 2014/2015 is almost coming to an end. However the European Medical Students' Association (EMSA Europe) is looking forward to releasing the next edition of EuroMeds (May 2015) during the Spring Assembly in Warsaw, Poland.

This issue revolves around the topic of lifestyle medicine, which can be thought of as a branch of evidence-based medicine in which comprehensive lifestyle changes such as nutrition, physical activity, stress management, social support and environmental exposures are used to prevent, treat and reverse the progression of chronic diseases, whilst addressing the underlying causes.

In today's hectic life, special efforts are needed to raise awareness on prevalent conditions such as Obesity, Type II Diabetes, Cardiovascular Disease, Cancer, Depression, Sexually Transmitted Diseases and Neurodegenerative disorders...and the EuroMeds 2015 Editorial team sought to do that in this edition. Apart from this, you will find additional inputs on various public health initiatives across Europe; which can be considered an imperative role of medical students, confessions of student-exchange programmes, as well as updates on several EMSA Europe events and upcoming projects.

On this occasion, I'm honoured to acknowledge the sponsorship, and welcome the contribution of several members of the European Society of Lifestyle Medicine, chaired by Dr. Michael Sagner. My deepest gratitude is also directed to another special guest, Dr. Etienne Grech, for his sound advice as a family physician. I would also like to express my sincerest regards to Dr. Olga Rostkowska, the Immediate-Past President of Emsa Europe (2013-2014), for believing in my abilities and for being constantly available to lend a helping hand.

Furthermore, my heartfelt appreciation is also directed to all the ambitious, European medical students whose valuable time and contribution made this outstanding project come to fruition. More precisely, I would like to congratulate all the talented authors for carving their prestigious writings into numerous pages, the dedicated proofreaders without whom many language errors would have gone unnoticed, as well as the creative layout designer for making this magazine visually attractive to the eyes of its readers. It was my greatest pleasure managing an extraordinary team of over 55 people from across 14 different European countries. Last but not least, I would like to thank the previous and current EMSA (Europe) Executive Boards for entrusting me with the demanding role of Euromeds Editor-in-Chief.

I sincerely hope you will enjoy reading this publication, as much as we enjoyed working on it. As you flip page over page, kindly help us spread its contents far to the general public to be able to fully execute our objective of raising awareness on lifestyle medicine.

Until we meet again at the EMSA Autumn Assembly in Berlin, Germany (September 2015), I humbly suggest taking into consideration the opportunity to inspire others by contributing to any upcoming editions of this publication.

Europeanly yours,



Georgiana FARRUGIA BSc (Hons)  
EMSA EuroMeds Editor-in-Chief (2014/2015)



***"All those who pop medicine but neglect to adopt a healthier lifestyle waste the skill of their physicians. Now is the time to introduce all the necessary changes, because there is nothing as imperative as taking care of our health and letting our lives flourish."***

**- Farrugia, G. (2015)**



# The Presidential Forewords

## A New Chapter



Via every edition of Euromeds, EMSA (Europe) seeks to shed light on one special medical topic. This time, it echoes the theme behind our very first EMSA Spring Assembly: Lifestyle medicine.

With the collaboration and financial support of the European Society of Lifestyle Medicine (ESLM), the Euromeds Editor-in-Chief, Georgiana from Malta, as well as her European team of authors, proof-readers and layout designer, managed to finalize a brand new edition of a very informative health magazine, which without any doubt marks something unique in EMSA's history: the largest Euromeds that has ever been released by our association - both in the number of articles, as well as distribution of printed copies.

The EMSA European Board would like to congratulate all the contributors, as well as the Euromeds Editorial team on this amazing success and wishes you as readers many fruitful moments with this impeccable edition.

**Jannis PAPAZOGLU**

**EMSA (Europe) PRESIDENT (2014/2015)**

**“ Soon you will hold a title that many are privileged to see following their name: the letters “M.D.” People will look up to you. People will respect what you think and say. People will trust you, confide in you, and appreciate your efforts. You can do amazing things for people if you don't let the system get you down. But with that power, comes great responsibility. ”**

## A New Medicine

Dear Medical Students,

We appreciate the opportunity to address such an impressive pool of medical students. As from the first day of medical school, you have all endured countless hours of lectures, physical examinations and ward rotations under the watchful eye of senior residents. Soon you will hold a title that many are privileged to see following their name: the letters “M.D.” People will look up to you. People will respect what you think and say. People will trust you, confide in you, and appreciate your efforts. You can do amazing things for people if you don't let the system get you down. But with that power, comes great responsibility. The world has changed fundamentally in the last decades and you are right in the middle of this transition. These changes have not only affected the economy and our environment, but also have grave consequences for health care systems worldwide. You entered into the world of medicine and science at a time of radical change, a period which is particularly exciting and challenging for physicians. How you choose to deal with these challenges will determine not only your career path, but also the future of various health care systems and health itself.

Most patients that you will be treating during your career as physicians will suffer from some kind of chronic, lifestyle-related disease. In fact, about 80% of the diseases that we are treating today are caused by lifestyle factors such as poor nutrition, tobacco, abuse of alcohol, chronic stress and physical inactivity. These diseases are expensive to treat and involve a long period of suffering for our patients because of their chronic nature. In the past, health care and medicine have focused on treating the symptoms of these diseases. However, today we have gathered overwhelming evidence that lifestyle factors are the underlying causes of diseases of the 21st century. The burden of a poor lifestyle choice is no longer sustainable and impossible to ignore. To treat the causes of these diseases and to be successful in their prevention, a strong focus must be placed on understanding their pathophysiology whilst addressing their underlying causes and mechanisms. This is the reason why a new field in evidence-based medicine is emerging, dedicated to prevention and treatment of these chronic, lifestyle-related diseases; Lifestyle Medicine.

Lifestyle Medicine encompasses research, prevention, diagnosis and treatment of dysfunctions caused by a non-physiological lifestyle and morbidogenic environments conducive to such lifestyles. Treatment of lifestyle related diseases includes nutritional, exercise, psychological, social, economic and environmental interventions. To do this successfully requires education, training and communication about Lifestyle Medicine at the professional and general public level. Lifestyle Medicine is at the intersection of all medical disciplines, internal medicine, sports medicine, psychology, nutrition, public health, and the social sciences. To address the current challenges in health care, medicine has to change. And this change has to start with you, the next generation of medical doctors. Each of you began this venture as a medical student in the age of digital technology. But more data is not always better data. More data can confuse and obfuscate. Not everything that can be measured matters and not everything that matters can be measured, Einstein famously said. Certainly, it makes no sense to focus on answering new questions while failing to use to greatest effect the reliable answers already at our disposal. Your greatest challenge as newly minted doctors in this digital age will be to put your smart-phones down. Whatever you do, don't let technology distract from what matters most: your patient.

Lifestyle Medicine is at the intersection of cell, clinical medicine and community. All the articles in this special issue will give you an overview of different aspects of Lifestyle Medicine. We encourage you to have a look at the websites of the European Society of Lifestyle Medicine and the American College of Lifestyle Medicine; as well as become members of these respective societies if you are interested in Lifestyle Medicine (both organizations offer special rates for students). Whatever you do in medicine, you should be interested in lifestyle. Nothing else in all of medicine holds the promise to add as many years to life, and as much life to years. Nothing else in all of medicine has as much potential to prevent disease, and treat it. Nothing else in all of medicine is as universally relevant, free of adverse side effects, and cost effective. We have heard since Hippocrates about the power of lifestyle as medicine, and have proven its benefits with research in the modern age. We know how to prevent up to 80% of the chronic disease burden in the world today. You enter medicine at a time redolent with both urgency, and opportunity. It is time to turn what we know, into what we do. Because we can no longer afford the alternatives...If not now, when? If not us, who?

Sincerely,

**Michael Sagner, MD & David Katz, MD MPH**

**President of the European Society of Lifestyle Medicine  
& President of the American College of Lifestyle Medicine**





# From Warsaw, With Love!



**Aleksander Zarzeka**, *On behalf of the Spring Assembly Organizing Committee (EMSA Warsaw)*



There are at least 27 reasons why you should never visit Poland, but if you are reading this text, you probably do not know about them. You may have heard a lot of different and strange things about the Poles and Poland, and you may associate our country with just beautiful girls and delicious vodka. Some of you may have heard, or even experienced great Polish hospitality, while others may suppose that if one can't find a car, it is probably already in Poland.

What does Poland really look like? You will end up seeing for yourselves, but let me introduce you a bit to this adventure.

For sure, we like to be the first; we adopted the first constitution in Europe, we held the first democratic elections behind the iron curtain before the fall of the Berlin Wall, and we had one of the first female Prime Ministers in Europe and the first female Nobel Prize winner - Maria Skłodowska-Curie, who got the prize twice.

Being the first also applies to medicine. Alexander Fleming, who discovered penicillin, was not a Pole, but the first life saving face transplant was conducted in Poland exactly two years ago - a 27-hours operation was performed just a week after the patient's accident, usually, it takes doctors months to prepare for this surgery.

Poles also love liberty. Poland was the first country in Europe to put into effect the freedom of religion. When we did not have independence, we struggled for it, and we succeeded. We were unbent during the 1st and 2nd World Wars and communism, maybe that is why in spite of us being euro-enthusiastic generally, a lot of us are afraid of the loss of sovereignty; this is the same reason why we support Ukraine in this dramatic moment of its history.

The EMSA Summer Assembly will take place in Warsaw - capital of Poland - the same place where EMSA Poland came into existence 10 years ago, and the EMSA National Coordinators' Meeting was held 5 years ago. Welcome once again during this double anniversary! You will visit the modern city on two riversides of the Vistula river where you can find a lot of monuments, green areas, some quiet places, and inspiring people.

What must you see in Warsaw? There are a lot of interesting places: Old Town, Łazienki Park, Museum of Warsaw Uprising, Copernicus Science Center, Wilanów Palace, Chopin Museum, or even Praga district.

What will you see in Warsaw? For sure the Palace of Culture and Science - a building you will certainly recognize.

If you have some free time during these busy days, I have just one advice for you: walk by a Royal Tract, feel the city's spirit, and.....fall in love with Warsaw!





# Introduction to Lifestyle Medicine

## Myths vs Facts

Compiled by the Euromeds Editor-in-Chief, Georgiana Farrugia

### 1) OBESITY (Myth): If you're obese, it's time to blame your genes! X

(Fact) As obesity rates have soared, some researchers have focused on individuals' genetic predisposition for gaining weight. Yet, between 1980 and 2014, the number of European citizens who are obese has quadrupled – too quickly for genetic factors to be responsible. ✓

### 2) WEIGHT LOSS (Myth): Snacking is always a bad idea! X

(Fact) The good news is you don't need to starve to lose weight, because having healthy snacks in between meals aids in boosting your metabolism and might actually help you to put off the urge to overeat or binge later. In fact, dietitians often recommend that you have five smaller meals a day, instead of eating your calories all at one-go. ✓

### 3) CARDIOVASCULAR DISEASE (Myth): If you have smoked for years, you can't reduce your risk of heart disease by quitting. X

(Fact) The benefits of quitting smoking start the minute you quit, no matter your age, how long you have smoked, or how many cigarettes a day you have smoked. Only one year after quitting, your heart attack risk will have dropped by 50%; in 10 years, it will be the same as if you never smoked. ✓

### 4) TYPE II DIABETES (Myth): I'm diabetic, and I can always tell when my blood sugar is high or low. X

(Fact) You can't rely on how you're feeling when it comes to your blood sugar level. You may feel lightheaded and dizzy because your blood sugar is low, or you may be coming down with the flu. You may urinate a lot because your glucose is high, or because you have a bladder infection. The longer you have diabetes, the less accurate those feelings become. The only way to know for sure is to check your blood sugar. ✓

### 5) CANCER (Myth): If any of your parents had cancer, you will have it too. X

While it is true that some cancers are genetic, this does not mean that one will definitely develop cancer because of their heredity. Cancers such as breast cancer, ovarian cancer and colorectal cancer are a few of the cancers that can be passed down genetically. However, if a child inherits the gene, it only raises the likelihood of developing cancer, not guaranteeing a cancer sentence. ✓

### 6) NEURODEGENERATIVE DISORDERS (Myth): Alzheimer's is an old person's disease. X

(Fact) Age is the strongest known risk factor for Alzheimer's disease. But this does not mean that most people develop the disease as they age. Most do not. As well, some younger people, in their 40s or 50s, have been diagnosed with the early onset form of the disease. What's most important to understand is that Alzheimer's disease is not a normal part of aging. ✓

### 7) DEPRESSION (Myth): It isn't a real illness, but a sign of weakness. X

(Fact) No one chooses to develop depression. It is a complex mental disorder that affects a person biologically, psychologically and socially, and does not discriminate. People with depression actually have physical differences in their brain, as well as neurotransmitter and hormone imbalances. Categorizing this condition as a matter of character only belittles how people with depression feel and deters them from seeking treatment. If anything, there is great resilience in the person that feels truly debilitated by this condition but makes an effort to work through it on a daily basis. ✓

### 8) STRESS (Myth): It always reflects negativity. X

(Fact) Stress is to the human condition what tension is to the violin string; too little and the music is dull and raspy; too much and the music is shrill or the string snaps. Stress can be the kiss of death or the spice of life. The issue, really, is how to manage it. Managed stress makes us productive and happy; mismanaged stress hurts and even kills us. ✓

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# Lifestyle Medicine

## Our Health : From Cell to Community

In your career as medical doctors, the leading diseases you will encounter are chronic lifestyle-related diseases (also called non-communicable diseases, NCDs); cardiovascular disease (17 million deaths annually), followed by cancer (7.6 million deaths), respiratory disease (4.2 million deaths) and diabetes (1.3 million deaths). Many of our teachers and professor have witnessed the epidemiological shift in morbidity and mortality resulting from infectious diseases and malnutrition, to lifestyle-related diseases. While we have gained approximately 10 years of life expectancy since 1970, we are spending more years living with injury and illness. Representing 63% of all deaths, most that die from NCDs are in the prime of their productive years.

There is now overwhelming evidence that lifestyle factors such as poor diet, physical inactivity, tobacco use, excessive alcohol consumption and psychosocial factors, e.g. chronic stress, sleep deprivation and lack of social support and community, are key factors in the pathogenesis and incidence of NCDs. Lifestyle factors may also be more distal stressors, including economic, political or a high density population.

The United Nations General Assembly held a high-level meeting in 2011 on the prevention and control of Lifestyle-related Diseases, calling for commitment and collaboration between and within governments, the private sector, civil society, the United Nations and international organizations.

The European Society of Lifestyle Medicine, the Australian Lifestyle Medicine Association and the American College of Lifestyle Medicine define lifestyle-related diseases (LRDs) as diseases where the pathophysiology is significantly influenced by lifestyle factors and where a change in these factors can significantly improve prevention and treatment of the disease.

The world's population has more and more adopted an 'unnatural' environment which leads to numerous biological dysfunctions, such as epigenetic changes and low-grade systemic inflammation, which underlie most chronic diseases. The first sign of a sub-optimal lifestyle is often increased body weight through a hypercaloric diet and inadequate physical activity.

It is imperative that medicine finally and systematically addresses the underlying causes of Lifestyle-related Diseases rather than superficially treating symptoms.

Today, one in two Americans and Europeans is either overweight or obese. Average body mass indices have on average risen by as much as 2-2.5 kg/m<sup>2</sup> per decade and is now 30 kg/m<sup>2</sup> or higher in some countries.

Physical activity has decreased drastically over the past century, because of economic growth, digitalization and urbanization. Over 70% of people in much of the modern industrialized world are not achieving adequate levels of health-promoting physical activity. The impact of poor lifestyle is not limited to physical diseases but also increases the risk for mental disorders such as depression and anxiety, which is increasing worldwide.

The economic burden of lifestyle-related diseases is no longer sustainable and is impossible to ignore. LRDs have been established as a clear threat not only to human health but also to development and economic growth.

At a time when the power of lifestyle medicine and lifestyle interventions to prevent and reverse chronic diseases is becoming well-documented, the limitations and costs of high-tech medicine are becoming clearer.

Building on the existing definition, the American College of Lifestyle Medicine, the Australian Lifestyle Medicine Association and the European Society of Lifestyle Medicine define Lifestyle medicine (LM) as: Lifestyle medicine is a branch of evidence-based medicine in which comprehensive lifestyle changes (including nutrition, physical activity, stress management, social support and environmental exposures) are used to prevent, treat and reverse the progression of chronic diseases by addressing their underlying causes. Lifestyle medicine interventions include health risk assessment screening, health behavior change counseling and clinical application of lifestyle modifications.

Lifestyle Medicine is often prescribed in conjunction with pharmacotherapy and other forms of therapy. Lifestyle medicine is an inter-disciplinary field of internal medicine, psychosocial and neurosciences, public and environmental health, and biology. Key principles include prevention strategies that address lifestyle habits, the underlying biological causes (also more distant causes such as urban design initiatives to make cities and neighborhoods more social and conducive to healthier lifestyles), and the pathophysiology common to LRDs (e.g. low-grade systemic inflammation, dysregulated stress axis, metabolic dysfunctions etc.).

As such, Lifestyle Medicine is an adjunct form of treatment that helps to bridge the best aspects of public health and conventional clinical medicine. Lifestyle Medicine has the potential to reduce the burden of chronic disease to the health system, and increase quality-of-life and longevity in the individual. For example, in the European Prospective Investigation into Cancer and Nutrition study of 23,000 people, changes in lifestyle factors could potentially prevent 93% of diabetes, 81% of heart attacks, 50% of strokes and 36% of all cancers. In addition to prevention, Lifestyle Medicine can reverse disease progression. When we address these root determinants of our health, we find that our bodies often have a remarkable capacity to begin healing themselves, and much more quickly than had once been thought possible. Moreover, Lifestyle Medicine treatments result in significant cost savings because the regenerative and biological mechanisms that



### **Michael Sagner MD, Ioannis Arkadianos MD, Stephan Roessner MD, Stefania Ubaldi, MD**

control our health and well-being are so efficient once a physiological lifestyle is adopted. If an unhealthy lifestyle persist over a longer time period it can lead to a common pathway of activated neurotransmitters, neuropeptides, hormones and cytokines which mediate pathophysiology. Lifestyle-related With our improved understanding of the molecular and cellular pathophysiology of Lifestyle-related Diseases, such as telomere length and epigenetics we must now translate the research (aetiologic, including psychology and intervention studies) into physiologically and psychologically healthier ways of living.

Today, patients are often confused by seemingly conflicting health and lifestyle recommendations conveyed through the media. It is vital that health professionals clearly communicate that there is no doubt about the basic constituents of a healthy lifestyle.

There must be clear communication on the magnitude of benefit(s) possible and the magnitude of lifestyle change necessary to achieve it. Safe, effective, sustainable and evidence-based lifestyle recommendations must be included in the education and training of health professionals and journalists, so they may in turn be communicated to the general public.

A recent survey found that a high proportion of patients attending primary care with unhealthy lifestyles do not perceive the need to change their habits, and about half the patients reported not having had any discussion on healthy lifestyles with their family doctors. There is an unexplained and no longer bearable time lag between the overwhelming evidence for the harmful health consequences of an unhealthy lifestyle and taking meaningful action at the individual, social and societal level to modify these behaviors and morbidogenic environments. In particular, medical care does not often address lifestyle changes as a primary concern. Medical practitioners are often unable to cope diagnostically and therapeutically with patients in urgent need of lifestyle changes. The competence and confidence to diagnose and change unhealthy behavior is lacking.

Medical schools must improve education and training in the treatment and prevention of lifestyle-related diseases for the next generation of medical doctors. There needs to be changes in attitudes and perspectives such that practitioners understand therapeutic lifestyle changes to be the most scientifically valid, clinically effective and achievable treatment possible for most common conditions (Lifestyle-related Diseases).

In the modern era of evidence-based medicine, it is unacceptable not to offer the treatment option of effective lifestyle medicine services. Evidence-based Lifestyle Medicine is safer, often more effective and less expensive and should be part of the 'toolbox' of every practitioner, patient and health care provider on every continent today. It will require the collective efforts of academia, faculties and stakeholders to change the education towards are more sustainable and evidence-based system.

To deliver effective care in today's medical world we have to start treating the underlying causes in the chronic disease epidemic. The change that we need to see has to start with you: the medical students.



# Lifestyle Medicine

## A Personal and Professional Challenge



*"Whenever you find yourself on the side of the majority, it's time to pause and reflect." -Mark Twain*

### Choices

The biggest dilemma for a medical student during medical school is which specialisation to follow later on in life. The choices are usually influenced by the prestige of the speciality, career perspectives, financial aspect and the personal experiences in the field during classes. TV shows like 'Grey's Anatomy', even if they are entertaining in terms of character play, wrongly enforce the idea that medicine is mainly healing, with prevention taking a second place.

### Realities

Questions arise the moment we face the first practical professional realities: patients with certain chronic diseases are not responding to our different treatments even if we respected proper protocol. These failures are professionally frustrating and very expensive for the social security system of the society we live in. Where did we go wrong? We viewed our patient like another case, ignoring the fact that we have a whole person with a lifestyle in front of us. We had never exactly been taught how to take this into consideration.

### Lifestyle Medicine

Lifestyle medicine is the evidence-based practice of helping individuals to adopt and sustain healthy behaviours that will affect health and quality of life. Dean Ornish, the lifestyle medicine pioneer, considers four major components: nutrition, physical activity, stress reduction and rest, and social support systems. Lifestyle medicine is a concept that rings familiar nowadays, but it is neither new nor alternative. The Hippocratic physicians of the fourth and third centuries BCE believed that food was medicine and vice versa. Lifestyle medicine prevents and treats many non-communicable chronic diseases like type-2 diabetes, obesity, hypertension, sexual health issues, many cancers; such as breast and colon cancer.

### New Approach

Why is this speciality bringing something new in medicine? Our patient will not leave our medical office just with a classical medical prescription but with an adapted lifestyle: mainly prescriptions on nutritional and physical activity. Telling our patient to exercise more or to avoid fat is too vague to be helpful. I agree it is not easy. We need to have very good communication skills to be able to understand the patient's real daily life challenges. In this regard, we have to be familiar with tools such as motivational interviewing, positive psychology, and cognitive behavioural therapy.

### Challenge

Is Lifestyle medicine a personal challenge? An efficient communication is already difficult for the majority of medical staff, but maybe most challenging is for us, physicians, to lead a healthy lifestyle: making nutritious food choices, staying physically active, prioritizing rest and life balance, and consistently pursuing healthful relationship and support systems. Patients are more likely to follow the advice of a physician who leads by example and can share from personal healthy lifestyle experiences.



**Ioan Hanes, MD**

### Official

Many famous medical schools like Harvard, Stanford or Yale have already integrated the concept of lifestyle medicine in their curricula. Europe is starting only now to make the logical step. Is it easy to be a lifestyle medicine specialist? It depends on your location: in US it is recognised as a speciality by the medical board since 2012. A practicing physician should possess the following knowledge, skills, attributes and values to practice lifestyle medicine: leadership, expertise, assessment skills, management skills, office and community support.

### Action

The United Nations General Assembly held a high-level meeting in 2011 on the prevention and control of non-communicable diseases, calling for commitment and collaboration between and within governments, the private sector, civil society, the United Nations and international organisations. One year later, the American Medical Association reached a resolution to «...urge physicians to acquire and apply [...] lifestyle medicine, and offer evidence-based lifestyle medicine interventions as the first and primary mode of preventing and, when appropriate, treating chronic disease within clinical medicine. Until this concept is fully developed and recognised in Europe, what can we do? I asked the vice-president of the European Society of Lifestyle Medicine (ESLM), Dr. Ioannis Arkadianos, and his answer was simple but efficient: "Start to integrate adapted healthy lifestyle advices in your consultation, even if it is for 5-10 minutes". Paraphrasing him, I would say to you, a medical student, whenever you study, take 5-10 minutes to read and think on how lifestyle can influence your patient with the specific chronic disease.

According to the World Health Organization, two-thirds of all diseases worldwide will be the result of lifestyle choices by 2020.

*"A year from now you will wish you had started today"*  
- Karen Lamb

### References

- American Medical Association House of Delegates Resolution C. 2012
- Howe M, Leidel A, Krishnan SM, Weber A, Rubenfire M, Jackson EA. Patient-related diet and exercise counseling: do providers' own lifestyle habits matter? *Prev Cardiol.* 2010; 13 (4): 180-185  
<https://eu-lifestylemedicine.org>
- Lianov L, Johnson M. Physician competencies for prescribing lifestyle medicine. *JAMA* 2010; 304 (2) 202-203.
- Lifestyle medicine potential for reversing a world of chronic disease epidemics: from cell to community. *Int J Clin Pract*, November 2014, 68, 11, 1289-1292
- Schroeder, S. We can do better ; Improving the life of the American people *NEJM*, 2007, 357: 1222-25
- Teaching nutrition and physical activity in medical school: training doctors for prevention-oriented care. Bipartisan Policy Center (BPC), the American College of Sports Medicine (ACSM) and the Alliance for a Healthier Generation (Alliance). 2013-2014

# Best Medicine, Seeking Spoon!



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We all have Mary Poppins to thank for the reminder that medicine can only do its job if it actually goes down, helped by the right spoon. The last thing we need these days is more spoons full of sugar, so we come to the challenge before us: if lifestyle is the best medicine, what is the corresponding spoon to help it go down?

First, let's be clear, lifestyle IS the best medicine (Katz, 2013). The evidence underlying that contention is vast, consistent, generalizable, time-honored, and robust. We need a variety of interventions to treat the wide variety of ways our health can break (even though lifestyle interventions figure in that mix as well), but when the goal is optimizing health rather than opposing disease, lifestyle medicine has no rival. The artful practice of lifestyle medicine is the best chance each of us has to add years to our lives, and life to our years.

Hippocrates recognized the power of lifestyle as medicine some 2500 years ago, testimony to his wisdom and prescience, but we know about the power of lifestyle as medicine in this modern age in ways that were unavailable to Hippocrates. A seminal epidemiologic study published in 1993 in the *Journal of the American Medical Association* famously pointed out that the leading actual causes of premature death in the United States are not heart disease, cancer, and so on, but the things that cause heart disease, cancer, and so on (Mc Ginnis & Foege, 1993). Those factors sum up to a list of ten exposures each of us, and out patients, overwhelmingly have the capacity to control in our daily lives. That list of ten is in turn overwhelmingly dominated by just the first three: tobacco use, dietary pattern, and physical activity pattern, or as I like to call them - how we use our feet, our forks, and our fingers.

That initial study spawned a whole branch of epidemiologic literature, reaffirming, over a span of decades, that lifestyle is by far the best medicine ever conceived, or if neglected, a source of years lost from life, and life lost from years. Numerous studies have shown that feet, forks, and fingers, are nothing less than the master levers of medical destiny. Add to these three the management of sleep, stress levels, and loving relationships in our lives, and the control over our medical destinies is astounding.

In tandem with previous literature showing how these factors overmaster our fate with regard to chronic disease risk, there is a burgeoning literature showing that they have the capacity to alter gene expression too (Ornish, et al., 2008). The Genomic Age has served up a powerful insight, albeit not the one we were expecting - DNA is not destiny. To a greater extent, dinner is destiny - because dinner and lifestyle, can alter the behavior of our very genes. The nature/nurture debate is rather an unfortunate distraction, because we can in fact, nurture nature.

Unfortunately, the best of medicine may not go down easily. That short list of salient priorities lies on the road seldom taken in some cultures, and on a path of minimal resistance in others. Where lifestyle exerts the greatest net benefit on bodies, the body politic has a lot to do with it. Blue Zones result where the prevailing norms facilitate health and vitality.

A group of researchers reviewing literature on behalf of the United States Preventive Services Task Force, concluded that "Intensive diet, and physical activity behavioral counseling, in persons with risk factors for cardiovascular disease, resulted in consistent improvements across various important intermediate health outcomes up to 2 years" (Lin, et al., 2014); those intermediate health outcomes included LDL, blood pressure, fasting blood glucose, and body weight. On the basis of this evidence review, the Task Force now formally recommends lifestyle counseling to modify cardiovascular risk.

The kind of counseling recommended is intensive, suggesting that lesser interventions just won't get the job done. The Task Force gave this recommendation a "B" grade, meaning "there is a high certainty that the net benefit is moderate, or a moderate certainty that the net benefit is moderate to substantial." In contrast, an "A" grade indicates high certainty in substantial benefit.

Why a "B" level enthusiasm for intensive counseling? Because the evidence evaluated is for the most part, the evidence of what clinical interventions can do; that they can be helpful at all is perhaps surprising in a culture that conspires directly against them, for instance, physicians and other health care professionals offer advice about healthful eating while big food companies engineer irresistible junk; two steps forward, three steps back, is not a great formula for progress.

And yet we are making some in spite of it all. Recent evidence from the  
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And yet we are making some in spite of it all. Recent evidence from the Look AHEAD Trial (Espeland, et al., 2014) indicates that intensive lifestyle counseling can both improve outcomes and lower costs in the management of type 2 diabetes.

Clinicians can, and should, play an important role in the administration of lifestyle as medicine. By acquiring and practicing the relevant skills, we can play an even bigger role, defending and cultivating our own health, and that of our families.

But around the globe and across the decades, health benefits the most when society aligns the propagation of health with the priorities of culture. Lifestyle is the best medicine, and culture is the spoon. Making effective use of lifestyle as medicine begins by acknowledging we know the right prescription. We do, including diet (Katz & Meller, 2014), and if we could get past the distractions of competing dogma, we would have the destination clearly in our sights.

Once the destination is clear, it's a matter of following a route that leads there. And so we come to it - a fork in the road, where for far too long, a luminous opportunity for better health, and consequently better lives, has languished. A fork where health could remain along the road not taken, or find itself on a path of minimal resistance.

Along one tine of our fork is perpetuation of the status quo - where we lose patients and loved ones we don't have to lose, long before their time, or perhaps they lose us. It's a road where we succumb to unnecessary miseries and lose both years from life, and life from years, where we bequeath the same and even worse to our children - where they inherit along with our abdication, a greater burden of chronic diseases, and premature deaths at younger ages. I hope this road is readily renounced.

Along another tine is a world that makes health more accessible, a better world. There is a place, an important place even, on that road for lifestyle IN medicine, where health care professionals offer valuable guidance, and counseling, that is both constructive and compassionate. But the power of this cannot compare to that of lifestyle AS medicine, where everyone can pull on the master levers of medical destiny every day. Think again about the Blue Zones, where people live the longest, healthiest, most vital lives, those benefits are attributed to how they live and to their culture, not to the counseling they get from doctors.

Health care professionals should contribute to both areas, we should be enablers of healthy living in clinical settings, and proponents of culture change that facilitates healthy living as citizens of our countries, and communities. We, collectively, are in control of our culture, which we can use to help change one patient, and one household, at a time.

In the world as it is, healthy living requires a skill set. Those who don't have it can get it, and we can help (Katz & Colino, 2014). Even better though, is to work toward changes in our culture, so that lifestyle as medicine, goes down more readily for all.

In other words, we are at a fork in the road for health care, our economy, our culture, and what the future holds for our patients, our children, and grandchildren. Only one tine of that fork leads to the spoon we need to help the world's best medicine go down. It's time to decide.

## References

- Akesson A, Larsson SC, Discacciati A, Wolk A. Low-risk diet and lifestyle habits in the primary prevention of myocardial infarction in men: a population-based prospective cohort study. *J Am Coll Cardiol*. 2014 Sep 30;64(13):1299-306
- Blue Zones: Live Longer, Better. <http://www.bluezones.com/>; accessed 1/27/15
- Espeland MA, Glick HA, Bertoni A, Brancati FL, Bray GA, Clark JM, Curtis JM, Egan C, Evans M, Foreyt JP, Ghazarian S, Gregg EW, Hazuda HP, Hill JO, Hire D, Horton ES, Hubbard VS, Jakicic JM, Jeffery RW, Johnson KC, Kahn SE, Killean T, Kitabchi AE, Knowler WC, Kriska A, Lewis CE, Miller M, Montez MG, Murillo A, Nathan DM, Nyenwe E, Patricio J, Peters AL, Pi-Sunyer X, Pownall H, Redmon JB, Rushing J, Ryan DH, Safford M, Tsai AG, Wadden TA, Wing RR, Yanovski SZ, Zhang P; Look AHEAD Research Group. Impact of an intensive lifestyle intervention on use and cost of medical services among overweight and obese adults with type 2 diabetes: the action for health in diabetes. *Diabetes Care*. 2014 Sep;37(9):2548-56
- Ford ES, Bergmann MM, Kröger J, Schienkiewitz A, Weikert C, Boeing H. Healthy living is the best revenge: findings from the European Prospective Investigation Into Cancer and Nutrition-Potsdam study. *Arch Intern Med*. 2009 Aug 10;169(15):1355-62
- Katz DL with Colino S. *Disease Proof*. Hudson Street Press. NY, NY. 2014
- Katz DL, Meller S. Can we say what diet is best for health? *Annu Rev Public Health*. 2014;35:83-103
- Katz DL. Lifestyle is medicine. *Virtual Mentor*. 2013 Apr 1;15(4):286-92. doi: 10.1001/virtualmentor.2013.15.4.ecas1-1304
- Kvaavik E, Batty GD, Ursin G, Huxley R, Gale CR. Influence of individual and combined health behaviors on total and cause-specific mortality in men and women: the United Kingdom health and lifestyle survey. *Arch Intern Med*. 2010 Apr 26;170(8):711-8
- Lin JS, O'Connor E, Evans CV, Senger CA, Rowland MG, Groom HC. Behavioral counseling to promote a healthy lifestyle in persons with cardiovascular risk factors: a systematic review for the u.s. Preventive services task force. *Ann Intern Med*. 2014 Oct 21;161(8):568-78
- McCullough ML, Patel AV, Kushi LH, Patel R, Willett WC, Doyle C, Thun MJ, Gapstur SM. Following cancer prevention guidelines reduces risk of cancer, cardiovascular disease, and all-cause mortality. *Cancer Epidemiol Biomarkers Prev*. 2011 Jun;20(6):1089-97
- McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA*. 1993 Nov 10;270(18):2207-12
- Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA*. 2004 Mar 10;291(10):1238-45. Review. Erratum in: *JAMA*. 2005 Jan 19;293(3):293-4
- On-line Weight Management Counseling for Healthcare Providers; <http://www.turnthetidefoundation.org/OWCH/index.htm>; accessed 1/27/15
- Ornish D, Magbanua MJ, Weidner G, Weinberg V, Kemp C, Green C, Mattie MD, Marlin R, Simko J, Shinohara K, Haqq CM, Carroll PR. Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle intervention. *Proc Natl Acad Sci U S A*. 2008 Jun 17;105(24):8369-74

# Expanding the Art of Chronic Disease Management

## *A Lifestyle Medicine Perspective*

### Introduction

In 2009, we signaled the emergence of a new field of clinical practice in this journal (Egger, et al., 2009). Lifestyle Medicine (LM), we suggested, is a developing response to the modern chronic disease pandemic. Since then, professional associations in LM have arisen in the US, Europe and Australasia. Post-graduate specialties are currently offered in a number of Universities and a growing number of texts are now available (Rippe & Egger, 2013). Yet apart from recognising the contribution of lifestyle and environmental factors to disease, the field has yet to develop its own structure or pedagogy. If it is to have a function, its contributions to existing care need to be elaborated.

### Defining the field

A short working definition of Lifestyle Medicine is as "...a branch of medicine targeting prevention and management of lifestyle-related diseases with evidence-based interventions."

Elaboration of the principles requires an understanding of the science (content) of chronic disease, as well as the art (processes) involved in putting lifestyle and environmentally-based chronic disease management into action. The current state of the discipline can be encompassed under three headings: 1. Knowledge 2. Skills and 3. Tools.

### Developing the knowledge base

With infectious diseases, causality can usually be ascribed to biological causes, using classical principles such as Koch's postulates (Koch, 1884). With chronic disease, establishing causality is more problematic (Bradfield-Hill & Bradford, 1965).

The discovery of a new form of low grade, systemic, inflammation ('metaflammation') in the 1990s however, (Hotamisligil, 2006) gave some hints as to epidemiology. As biological antigens are usually not causally linked to chronic disease, ascription is limited to the level of lifestyle and environmental determinants or 'inducers' (Medzhitov, 2008) which are linked with many, if not all major classes of modern chronic disease, in many cases through metaflammation. Considered as a whole, these have been labeled 'anthropogens', or 'man-made environments, their bi-products, and/or lifestyles encouraged by those environments, some of which have biological effects which may be detrimental to human health'. (Egger, 2012).

Consideration of such anthropogens is usually restricted to a limited number of these (poor nutrition, inactivity, smoking). And while these do explain a significant proportion of chronic disease, there is a number of other less apparent but no less significant determinants.

### Expanding skills

While knowledge (epidemiology) of lifestyle related determinants is relatively straightforward, 'process', or the skills required to change unhealthy lifestyles and the environments driving these is a more vexing issue. Environmental change for example is generally seen as a public health issue, primarily because this has involved largely structural (eg. sewerage, water, food quality etc.) interventions. Modern environments on the other hand (eg. the 'obesogenic', profit-based, 'growth driven' environment) drive behaviour, making environmental health



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a significant part of LM. The link with traditional public health thus needs further elaboration.

At the behaviour change level, while all the usual counseling skills (motivational interviewing, health coaching, self management training etc) are necessary, they may not be sufficient for dealing with complex chronic disease influencing behaviours and the environments driving these. Chronic disease management may require a lateral shift.

At a conventional level for example, it has been assumed that the clinical process of one-on-one (1:1) counseling, despite the lack of data supporting this over other forms of clinical engagement, is set in stone and would play the part in chronic disease management that it has successfully done in the past for acute diseases and injury.

Yet chronic diseases (cardio-vascular, respiratory, metabolic, carcinogenic diseases and even clinically severe obesity) have distinct requirements over acute care. By definition, they are long-term and need ongoing, often lifetime, attention. Secondly they have their determinants in often complex behaviours that are difficult to change, rather than microbial causes. Consequently short consultations, as afforded by Medicare recompense determined in an acute disease era, are unlikely to be totally appropriate.

Health education in groups, with an experienced leader (diabetes educator, dietitian, exercise physiologist etc.) arose to help overcome these problems, and MBS item numbers were added in the 1990s to pay for this. But group education lacks medical input and has limited uptake as part of the MBS. Individual 1:1 consulting on the other hand, has medical input, but lacks the educational component and time and peer support associated with group education.

Shared Medical Appointments (SMAs), are "... consecutive individual medical visits in a supportive group setting where all can listen, interact, and learn," (Noffsinger, 2012). These have been used as an adjunct clinical approach in the US and other countries and have now been successfully trialed in Australia (Egger, et al., 2010). They provide more time with the doctor, increased peer support, and greater opportunity for self-management. SMAs sit between clinical 1:1 care and group education. In the future they may become part of the clinical furniture for dealing with lifestyle environmentally driven, lifestyle-related chronic disease.

### Utilising Tools

LM tools are centred mainly around the concept of the 'quantified self', (Swan, 2009), which is evolving the role of patient



from a minimally informed recipient to an active collaborator in the patient-provider relationship. Improvements in technology however, have given rise to new devices and developments called 'mHealth', or health care and public health practices supported by mobile devices and other advances in telemetry.

Limited evaluations of single mHealth devices have appeared in the literature since 2003, shadowing the recognition of chronic ailments as a rising category of disease. Now a systematic review of such devices, has highlighted the potential of these as a new set of tools for chronic disease management. (Hamine, et al., 2011).

A recent WHO review notes that "Increasing adherence may have a greater effect on health than improvements in specific medical therapy." (Brown & Bussell, 2011). Well controlled studies comparing adherence with mHealth devices compared to prescriptive advice controls typically show a 50% improvement in adherence from the former, more than justifying a serious look at these for chronic disease management.

SMS messages are the most popular current mHealth devices, used for medication reminders, education, or information about disease management. Simple SMS reminders or information about new programs or treatments are not only effective, but cost effective. As an example, one of us (GE) involved in the 1990s development of the highly successful 'GutBuster's' men's waist loss program (Egger & Dobbson, 2000) found weekly advertising costs of \$10,000 for recruiting men through mainstream media crippling, leading to the early retirement of the program.

Operating out of medical centres we have now found a personal SMS invitation to 10 times the desired number of men to fill a Shared Medical Appointment group of 10-12, identified through medical records systems as falling within the required audience (eg. BMI>35; Metabolic Syndrome etc), is not only successful, but virtually cost free. SMS is also used for follow-up weekly tips. Fine targeting combined with a personalized invitation from the patient's GP could hold the key to better long-term chronic disease management in a number of disease areas (Egger & Dobbson, 2000).

Other mHealth devices include mobile phones plus software or applications, specific medical telemetry devices or phone plus wireless or Bluetooth compatible devices. Between them, these not only deliver education and reminders, but monitor functions such as blood pressure, heart rate and blood sugars to patients and providers.

Multiple outcome measures were used in the most recent review, including usability, feasibility and acceptability of the mHealth tools studied as well as adherence and disease specific outcomes. Examples of improved management included reduced HbA1C, hyperglycemic events, lung function, reduced blood pressure, better use of nebulizers, improved fitness levels etc.



mHealth tools were also found to increase self-care awareness and knowledge, improve patient confidence to monitor chronic diseases, and decrease anxiety about disease. Improvements were noted across all age and SE categories. However as might be expected, take up and use by adolescents, was shown to be particularly effective.

Significantly, an mHealth system between the patient and provider was less burdensome and judgmental compared to face-to-face contact, making such tools likely to be even more effective in a Shared Medical Appointments context or with individuals who are adverse to the 'scary' doctor-patient environment in a closed setting, such as Indigenous individuals.

When added to other modern telemetry tools such as movement sensors, portable sleep monitors, Bio-Impedance Analysis scales (BIA), grip strength dynamometers, pulse measures and other 'tools', for self-monitoring, motivation, brief assessments, self-care (primary prevention) and self-management (secondary/tertiary prevention), the future for chronic disease management, and the potential for lifestyle-related disease management through mHealth is encouraging - at least in comparison to the prescriptive environment developed for acute disease. Instantly accessible Internet assistance, self help-groups and virtual games provide further assistance.

Although not a departure from conventional medicine, Lifestyle Medicine knowledge, skills and tools provide an adjunct approach to managing lifestyle and environmental determinants of much modern chronic disease. LM fits a role between clinical medicine and public health, enticing clinicians to consider more distal environmental determinants of chronic disease than merely risk factors and behaviours within their bailiwick. Shared Medical Appointments (SMAs) provide an adjunct process for conducting LM consultations, and new 'tools', such as mHealth for doing this by capitalizing on modern technological developments increase treatment options. No doubt the field will expand further with research further assessing these ideas.

## References

- Bradfield-Hill A. Hill, Austin Bradford (1965). The environment and disease: Association or causation? *Proc Roy Soc Med.* 1965; 58(5):295-300.
- Brown MT, Bussell JK. Medication adherence: WHO cares? *Mayo Clinic Proc* 2011;86(4): 304-14.
- Egger G, Binns A, Rossner S. *Lifestyle Medicine: Managing Diseases of the 21st Century* (2nd Ed). McGraw-Hill, Sydney, 2013.
- Egger G, Dixon J, Meldrum H, Binns A, Cole M-A, Ewald D, Stephens J. Patient and Provider Satisfaction with Shared Medical Appointments *Aust Fam Phys* (in press)
- Egger G, Dobson A. Clinical measures of obesity and weight loss in men. *International Journal of Obesity*, 2000. 24(3):354-7.
- Egger G. In search of a 'germ theory' equivalent for chronic disease. *Prev Chronic Dis* 2012; 9(11):1-7.
- Egger G., Binns A, Rossner S. The emergence of a clinical process: 'Lifestyle medicine' as a structured approach to the management of chronic disease. *Med J Aust* 2009;190:143-145.
- Hamine S, Gerth-Guyette E, Fauix D, Green BB, Ginsburg AS. "mAdherence" and chronic disease management: A systematic review. *J Med Internet Res* (in press)
- Hotamisligil GS. Inflammation and metabolic disease. *Nature* 2006; 444: 860-867.
- Koch Robert. "2 Die Aetiologie der Tuberkulose". *Mitt Kaiser Gesundh.* 1884:1-88.
- Medzhitov R. Origin and physiological roles of inflammation. *Nature* 2008; 454: 428-435.
- Noffsinger E. *The ABC of Group Visits.* Springer, London, 2012.
- Rippe J. *Lifestyle Medicine.* (2nd Ed). CJC Press, London, 2013
- Swan M. Emerging patient-driven health care modes: an examination of health social networks, consumer personalized medicine and quantified self-tracking. *Int J Environ Res Public Health* 2009; 6:492-525.

# Life Style Medicine in the Maltese Islands

## The Perspective of a Family Physician



**Etienne Grech, MD, MMCFD, MP**

Now that I look back on the days when I was a medical student, I can recall that my colleagues and I, frequently used to make a fundamental error when approached by our clinical tutors during ward rounds. When we were asked about the specific treatment of various disorders, we promptly sought to state the names of a drug or a surgical intervention as an answer. Having more than 20 years of experience as a medical doctor, I can realize that this line-of-thinking was erroneous, because one must also emphasize on preventive measures, as well as take into consideration alternative remedies such as lifestyle modifications in order to treat an illness holistically. If for example, as a medical student, you are asked about the management of anxiety, the use of a pharmaceutical drug in the treatment of this disorder should probably be the last thing you state - because more focus should be given to your patient's everyday life encounters which are creating anxiety. Moreover, one must never underestimate the importance that in certain cases, medication may be avoided simply by dedicating time to relaxation, or relieving the emotional pain that is associated with a negative experience in life. Same applies for the treatment of hypertension. Apart from being knowledgeable about the different classes of anti-hypertensive drugs, adequate emphasis should be given to various lifestyle modifications such as weight loss, reduction of salt intake, regular physical activity and stress-relieving mechanisms, as these are also effective methods of reducing high blood pressure.

The lifestyle of a typical individual in the Maltese Islands is changing rapidly when compared to 50 years ago. Nowadays, it is quite common to fall in-the-loop of adopting a sedentary lifestyle. Although this type of lifestyle might be portrayed as stress-relieving, ultimately, it serves as a detriment to our health by contributing to the development of various disorders. Unfortunately, many local citizens are no longer benefiting from consuming a healthy Mediterranean diet that incorporates a great variety of fresh fish, fruit and vegetables because they are resorting to comfort-eating. It has become a well-known habit of a considerable number of people to gobble on foods that are extremely high in sugar or saturated fats on a regular basis. Furthermore, many are favouring coffee or soft drinks over fresh water. These bad eating habits have led to the Maltese population developing one of the highest rates of obesity world-wide, especially in children. As a result, hyperlipidaemia and Type II Diabetes are prevalent - in fact the latter is affecting around 10% of the Maltese population, second only to Cyprus in Europe.

Smoking is a major risk factor for coronary artery disease, stroke, peripheral vascular disease, chronic obstructive airway

diseases, lung cancer as well as other types of cancer. Unfortunately, despite adequate health warnings on cigarette packs, the old habit of smoking is still rife in adolescence and adulthood. Furthermore, Mediterranean people tend to have a habit of staying out in the sun for long hours throughout Summer, which is a known cause of skin cancer. Moreover, allergies of various types, including asthma and hay-fever are very common in Malta. The ability of a physician to explain to his or her patients about taking the initiative to stay away from allergens as much as possible is equally important as prescribing drugs to treat the condition. Occupational health and safety is also an important factor to be taken into consideration...even more so, when many occupational hazards and pollutants are still taking their toll in causing allergic disorders and other serious illnesses, despite the efforts being made by occupational health and safety authorities in its prevention.

It is no news to say that a greater expenditure of money is needed to sustain a decent living in today's economical standards. As a result, the majority of people are leaning towards an ever-increasing number of working hours that will in turn create stress-related physical and psychological illnesses as well as a downward spiral on family unity. Unfortunately, peer-pressure also plays a role in adopting a lifestyle which is conducive to certain disorders, such as sexually transmitted diseases as well as alcoholism. As health professionals, we have an imperative role to advise a spectrum of lifestyle changes to our patients in order to reduce many associated mortalities and morbidities. Having said this, one must also keep in mind that bad habits are always hard to change, so more often than not, it is not easy for a family practitioner to impose a modification on an individual. Luckily for us, this is where teamwork comes in...because doctors should not work alone under such circumstances. Government-funded advertising campaigns fulfill their job in convincing people to knock-out their bad lifestyle habits. A recent good move is the introduction of highly-specialized lifestyle modification clinics, which hire trained personnel to work with enrolled patients to reach targets related to weight loss, healthy nutrition as well as smoking or alcohol cessation. Furthermore, a series of lectures and hands-on workshops are addressed to the general public to promote the integral role of adopting a healthy lifestyle as part of the prevention and treatment of various disorders.



# The Role of European Medical Students in Lifestyle Medicine

According to the WHO and UN more than 70% of diseases worldwide are caused by lifestyle factors. The leading causes of mortality worldwide are lifestyle related diseases.

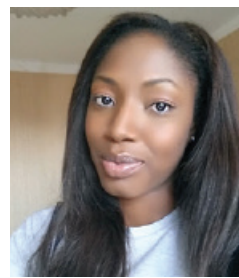
Lifestyle Medicine (LM) is the use of lifestyle interventions in the treatment and management of disease. Such interventions include: Diet (nutrition), Exercise, Stress Management, Smoking Cessation and a variety of other non-drug modalities.

A growing body of scientific evidence has demonstrated that lifestyle intervention is an essential component in the treatment of chronic disease that can be as effective as medication, but without the risks and unwanted side-effects.

LM is becoming the preferred modality not only for the prevention, but also the treatment of most chronic diseases, such as: Type-2 Diabetes, coronary Heart Disease, hypertension, obesity, Insulin Resistance Syndrome, osteoporosis and many types of cancer.

Scientific evidence suggests that general life expectancy across Europe has seen a significant rise in recent years. However, this comes at a very high cost to individuals, families and nations with its associated health issues such as an increase in chronic diseases with high medical costs. Lifestyle is one of the cardinal determinants of individual health. Therefore with the right lifestyle modification strategies, both morbidity and mortality in most of the multifactorial diseases can be significantly reduced. These effective and low cost lifestyle approaches will lower the financial burdens and provide the public with an alternative to the pharmacological treatment.

Any interventions aimed at meeting the current challenges in public health should be holistic to ensure a paradigm shift to preventive public health. This requires an all hands on deck attitude with medical students taking the center stage as part of the European initiatives; as they have a pivotal role in propagating the 'cure the causes' campaigns as part of the European initiatives.



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The internet is an unparalleled medium to spread the message for lifestyle modification. Medical students must take the advantages of the video streaming networks such as YouTube with viral videos concerning lifestyle changes like the benefits of smoke cessation, diet, stress management and exercise.

Campaigning and activism should be encouraged as a medium for reaching out to the population and policy makers. These would equip medical students with the hands on knowledge and a direct contact with the concerned communities. Doctors in training should actively involve themselves in efforts to better the public and individual health at a local level.



## References

European Society of Lifestyle Medicine

Developing a Lifestyle medicine practice specialty. Available at <http://www.lifestylemedicine.org/resources/Documents/DevelopingLMSpecialty.pdf>

Lifestyle medicine.org- American Society of Lifestyle medicine

WHO global status report on NCDs. 2010. Available at [http://www.who.int/nmh/publications/ncd\\_report\\_full\\_en.pdf](http://www.who.int/nmh/publications/ncd_report_full_en.pdf)



# Public Health Initiatives Across Europe



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“Prevention is better than cure” is one of the most famous English idioms, and it is also one of our main aims at the Malta Medical Students’ Association (MMSA). The MMSA has been established since 1951 and represents all the medical students studying at the University of Malta. It is the most active association on Campus, and strives to enhance the medical student life through active participation in various events that tackle the most common public health issues in our country.

We organise three main events during the year featuring health checks and health talks for the general public. These are Health-Fest, which occurs in March, World Heart Day in September, and World Diabetes Day in November. During these events, we raise awareness about cardiovascular disease and diabetes and their complications, which are leading causes of morbidity and mortality in Malta. We also promote healthy lifestyles and encourage people to make heart-healthy choices, by having fitness classes whilst also offering free health checks including blood pressure monitoring, blood glucose testing and body mass index (BMI) assessment. During these big events we have the support of the Health Promotion and Disease Prevention Unit (HPU) and the Ministry of Health. These events occur at popular sites such as our capital city in Valletta. This year, the biggest blue human circle in Malta was done by University students on World Diabetes day to signify our unity towards the prevention of diabetes.

Apart from these major events, we also coordinate multiple health checks in liaison with Local Councils and private companies where the public can have free checks on their health status. Through these smaller events we reach out to more people from different generations and different strata of society.

Other topics such as sexual health are also tackled by medical students. We celebrate World Aids’ Day with multiple outreaching events in December to eliminate the stigma and discrimination associated with the disease and also to decrease the transmission of the disease through the promotion of safe sex and sex education. This year, we visited different localities spread across Malta and performed a flashmob and outreaching to increase the knowledge of the public about HIV and AIDS.

To have a greater impact on our society, we give peer education sessions at schools to children of different ages, because we believe that if we want to change our society’s mentality, we have to target the younger generation. As MMSA, we have a very strong peer education system, where medical students educate young children and adolescents in a non-formal manner on crucial topics, such as fitness and nutrition, substance abuse, sexual health, anti-bullying, and much more. We provide our peers with friendly sessions, where they are enabled to comfortably ask questions to individuals whom they can relate to.

As medical students, we have a lot of knowledge, and as they say, knowledge is power. However, as Spiderman fans know, with great power comes great responsibility. As students, we have the responsibility to start empowering the public about their health choices and to make a difference in our healthcare system before becoming doctors. We are lucky to have the MMSA to offer us the chance to do so.



# Metabolic Syndrome



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It's important to point out that the metabolic syndrome isn't a disease in itself but a "syndrome". It is basically a cluster of symptoms and metabolic conditions that increase the risk of cardiovascular diseases and Diabetes Mellitus. What makes it so dangerous is that it can increase the risk of developing these very dangerous chronic diseases. The occurrence of diabetes is escalating each year (especially type 2, which makes up 90% of all cases) (IDF, 2003) making it the 4th or 5th cause of death in the developing world and 80% of these deaths are due to cardiovascular complications (UKPDS Group, 1996). An estimated 0.25% of the world's adult population have metabolic syndrome.

Population based studies show that the highest prevalence is found in the Middle East region, where more than every third person above 20 years fulfills the criteria (Al-Daghri, 2010). In the Americas, in Europe and in India, at least a fourth of the adults carry the syndrome. In fact, 20%-30% of the adult population of most countries carry the syndrome. In parts of the world where young adults predominate, the prevalence is lower; but with an increase in affluence and aging of the population, the prevalence rises (Grundty, 2008). This worldwide prevalence is also parallel to the rise in obesity.

Even though the surge in metabolic syndrome seems to be a recent development, it really isn't a new entity. In fact, it was first described in the early 20th century by Reaver. Over the years though, there have been various attempts by expert groups including the WHO (1999), EGIR (Balkau B, et al., 1999) and NCEP ATP III (JAMA, 2001) to develop a unifying definition and provide clinical criteria for diagnosis. Their definitions all corresponded but the clinical criteria differed. Thus, there was a strong need for a simple unified definition and diagnostic tool available to all clinicians in different countries to identify patients. This was accomplished by the International Diabetes Federation (IDF) in 2004. According to this new definition, a person with metabolic syndrome must have central obesity (an apple shape) plus two of four additional factors, including; raised triglycerides (bad cholesterol), reduced HDL-cholesterol (good cholesterol), raised blood pressure and impaired glucose tolerance or raised fasting glucose levels (Alberti, et al., 2006).

The driving force behind the metabolic syndrome is obesity (specifically central or truncal obesity). It's not news that there is an obesity epidemic in our world today. It is now thought to affect 50-60% of a nation's population. (IDF, 2003). With technology advances and increasing urbanization, lifestyles are becoming more and more sedentary, diets have reached unhealthy lows and physical activity is virtually non-existent. An average working individual leaves home in the morning, drives to work or school in a car, gets to work and sits all day in a chair, then drives back home and sits in front of a computer to work or a television to relax. Basically, we are moving from one chair to another, not to mention grabbing quick hunger fixes, which are probably not the healthiest options for our bodies. Compared to those who watched TV, or videos or used their computer for less than an hour daily, those who carried out these same activities for more than 4 hours a day had twice as much risk of ac-

quiring metabolic syndrome (Laaksonen DE, et al., 2014). Basically this goes to show that convenience is not necessarily our friend.

Coming fast on the heels of this is cardiovascular disease. Metabolic syndrome is a cluster of the most dangerous heart attack risk factors, and is now considered to be the driving force for a cardiovascular disease epidemic. Those with these risk factors are two times more likely to die from and three times more likely to have a heart attack or stroke compared to people without them. The overall cardiovascular mortality increased from 2% to 12% (Isomaa B, et al., 2001). It's a deadly cascade with obesity leading to a dyslipidaemic state and insulin resistance, with the development of hypertensive and atherosclerotic disease (Longo, et al., 2012). The connection between metabolic syndrome and cardiovascular disease even without frank diabetes is clear.

Most experts consider a diagnosis of metabolic syndrome as a warning sign of heart disease and diabetes. Thus, a modified lifestyle can significantly improve prognosis and even reverse this diagnosis. Since obesity is a major contributing factor, weight reduction is the primary approach. This is achieved by calorie restriction, increased physical activity for weight maintenance and behavior modification. The IDF recommends 5-10% weight loss within the first year of diagnosis to improve prognosis. Elimination of bad habits such as smoking and excessive drinking cannot be stressed enough. The Mediterranean diet is a palatable diet which includes healthy fats (such as olive oil), a reasonable amount of carbohydrates and protein from healthy sources (such as fish and chicken). This, along with thirty minutes or more of moderate intensity physical exercise has proven effective in both weight loss and maintenance.

What happens when even lifestyle modification doesn't help? In this case a secondary treatment plan must be added. This involves treatment of individual risk factors to stop progression of the syndrome and decrease the risk of developing Type II diabetes or cardiovascular complications. These include cholesterol lowering drugs and antihypertensives and drugs that decrease insulin resistance.

It is critical that an effort be made to tackle the underlying causes of the syndrome as it is a global burden. Measures must be taken to reverse the global epidemic of obesity and physical inactivity while improving the treatment methods of those with underlying susceptibility to the syndrome.

## References

- Al-Daghri NM (2010), Extremely high prevalence of metabolic syndrome manifestations among Arab youth: a call for early intervention. *Eur J Clin Invest* 40:1063-1066.
- Alberti, K. G. M. M., Zimmet, P. and Shaw, J. (2006), Metabolic syndrome—a new world-wide definition. A Consensus Statement from the International Diabetes Federation. *Diabetic Medicine*, 23: 469-480. doi: 10.1111/j.1464-5491.2006.01858.
- Balkau B, et al. (1999), *Diabet Med*; 16: 442-443.
- International Diabetes Federation (2003), *Diabetes Atlas*, second edition
- Isomaa B, et al. *Diabetes Care* 2001; 24: 683-689. <http://onlinelibrary.wiley.com/doi/10.1111/j.1464-5491.2006.01858.x/full#b49>
- JAMA (2001), Executive Summary of the Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol In Adults (Adult Treatment Panel III); 285: 2486-2497.
- Laaksonen DE, Lakka HM, Salonen JT, Niskanen LK, Rauramaa R, Lakka TA (2014), Low levels of leisure-time physical activity and cardiorespiratory fitness predict development of the metabolic syndrome.
- Longo, Fauci, Kasper, Hauser, Jameson, Loscalzo (2012), *Harrison's Principles of Internal Medicine Part 10*; 242: 1991-1992 (Pathogenesis of Metabolic Syndrome)
- Scott M. Grundy (2008), Metabolic Syndrome Pandemic Arterioscler Thromb Vasc Biol.;28:629-636, published online before print January 3 2008, doi:10.1161/ATVBAHA.107.151092
- UKPDS Group (1996), UK Prospective Diabetes Study 17: A nine-year update of a randomized, controlled trial on the effect of improved metabolic control on complications in non-insulin-dependent diabetes mellitus. *Ann Intern Med* 1996;124:136-45





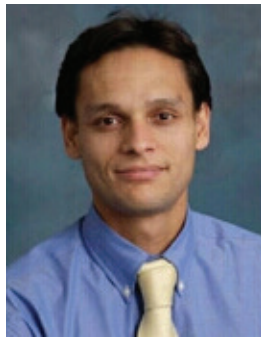
# Exercise is Medicine

## A Global Health Initiative



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The authors are going to ask for the reader's indulgence to engage in a brief thought experiment with us to see if our joint conclusions can lead to some informative and helpful strategic thinking about medical school curricula and, beyond this, about clinical medicine in general.

Let us suppose that a (rationalist) visitor from another planet, unfettered by earthly traditions, has been charged with establishing an optimal curriculum for all the medical schools on our planet. A reasonable starting point for our alien might be to ascertain the contributory factors of the population's overall health status and then, as an approximate guide, to try to align the medical school curricula with these factors. Observing that the World Health Organization reports that non-communicable diseases (NCDs) such as cardiovascular disease, diabetes and cancer are the major cause of death and disability worldwide (WHO, 2009) and that health behaviors contribute 50% of overall health status (Young, Capewell, Ford & Critchley, 2010), our alien rationalist might reasonably expect that a similar percentage of medical school curricula is devoted to health behaviors such as smoking, exercise, and diet. Furthermore, since trends suggest that healthcare costs are growing to astronomical scale and that NCDs will dominate healthcare costs in the coming years (Carlson, Fulton, Pratt, Yang & Adams, 2015), this alien might also expect that the policies of world governments are aggressively focused on changing those public behaviors that are significant contributory factors to this burgeoning fiscal burden. Also observing that the all-cause mortality attributable to low cardiorespiratory fitness is similar to the combined all-cause mortality of smoking, diabetes and obesity, our alien visitor might well conclude that the most important public health problem of the 21st Century that medical school curricula and medical community would be addressing is the lack of physical activity (Blair, 2009). We might therefore anticipate that our alien visitor would be surprised and more than a little confused when confronted by reality!

In defense of us earthlings, the evolution of medical school curricula and the sub-

sequent inertia that a respected, established body of knowledge often brings, means that we have a lot of inertia to overcome and we are beginning to make some progress in the policy and medical education areas:

- Policy - in 2012, the World Health Assembly adopted combating physical inactivity as a priority objective for global action item (WHO, 2013) but much work is needed if these global policies are to be translated into effective priorities for healthcare and public health systems at the local level (Lobelo, Stoutenberg & Hutber, 2014);
- Education - Many US medical schools include some study (of tobacco cessation, physical activity and diet) in their curricula but medical school graduates often feel that the education they receive in these areas is inadequate to prepare them for their jobs as doctors (Torabi, Tao, Jay & Olcott, 2011);

What about the translation of this into clinical practice? Although several evidence-based approaches to increase physical activity (PA) have been identified (Kahn, Ramsey, Brownson et al, 2002), no single intervention has shown itself able to solve the world's inactivity problem (Heath, Parra, Sarmiento, et al, 2012) and a comprehensive, multisectoral, 'whole of society' approach is most likely to be needed (Toronto Charter for Physical Activity). Our alien observer would hardly be surprised by this. After all, two (typical) fifteen minute visits per year to a general practitioner would hardly be expected to lead to sustainable change in a patient's health behaviors. It is therefore perhaps not surprising that some of the strongest evidence is in support of multipronged PA counselling, prescription and referral strategies that link healthcare and community-based resources (Vuori, Lavie & Blair, 2013). Recognizing this evolving body of literature, the American Medical Association and the American College of Sports Medicine launched the Exercise is Medicine (EIM) initiative in 2007 to advance the implementation of evidence-based approaches and strategies to elevate the status of PA in primary healthcare, the initiative's goal being to make PA a standard part of the medical paradigm for the prevention and treatment of NCDs in healthcare systems (Sallis, 2009). Specifically, EIM calls for PA to be considered by all healthcare providers as a vital sign in every patient visit (Sallis, 2011) and for patients to be effectively counselled and referred for their PA and health needs.

Since the launch of EIM in 2007, this global initiative has grown to have a global footprint, with seven Regional Centers and National Centers in 43 countries. EIM's European Regional Center is based in Ulm, Germany, with National Centers in several European countries (Lobelo, Steinacker, Duperly & Hutber, 2014). This growing EIM capacity and cross-national networks are poised to lead the programmatic implementation of these EIM principles, including increasing the exposure medical students get on the importance of PA for the prevention and management of NCDs (Huseyin & John, 2013) and how to assess and prescribe this "polypill" (Fiuza-Luces, Garatachea, Berger & Lucia, 2013).

In conclusion, there is strong evidence to support the argument that only through the adoption of a population health management approach will global society be able to prevent the overwhelming health and financial burdens of NCDs and that the linking of clinical to community medicine is likely to be an essential component of this. The authors believe that the next generation of physicians and other healthcare providers will need to be an essential vanguard in the adaptation of both medical education and clinical practice if the necessary transformation for 21st century medicine is to successfully tackle the large and difficult problems that it now confronts.

### References

- Blair SN. Physical inactivity: the biggest public health problem of the 21st century. *Br J Sports Med* 2009; 43:1-2.
- Carlson SA, Fulton JE, Pratt M, Yang Z, Adams EK. Inadequate physical activity and health care expenditures in the United States. *Prog Cardiovasc Dis.* 2015;57(4):315-23
- Fiuza-Luces C, Garatachea N, Berger NA, Lucia A. Exercise is the real polypill. *Physiology.* 2013;28(5):330-58.
- Heath GW, Parra DC, Sarmiento OL, et al. Evidence-based intervention in physical activity: lessons from around the world. *Lancet* 2012;380:272-81.
- Huseyin N, John PAI. Comparative effectiveness of exercise and drug interventions on mortality outcomes: metaepidemiological study. *BMJ.* 2013;347:f5577
- Kahn EB, Ramsey LT, Brownson RC, et al. The effectiveness of interventions to increase physical activity: A systematic review. *Am J Prev Med* 2002;22(4 Suppl):73-107.
- Lobelo F, Steinacker JM, Duperly J, Hutber A. Physical Activity Promotion in Health Care Settings: the "Exercise is Medicine" Global Health Initiative Perspective. *Schweizerische Zeitschrift für Sportmedizin und Sporttraumatologie/Swiss Journal Sports Med.* 2014; 62(2), 42-45.
- Lobelo F, Stoutenberg M, Hutber A. The Exercise is Medicine Global Health Initiative: a 2014 update. *Br J Sports Med.* 2014 Dec;48(22):1627-33
- Sallis R. Developing healthcare systems to support exercise: exercise as the fifth vital sign. *Br J Sports Med* 2011;45:473-4.
- Sallis RE. Exercise is medicine and physicians need to prescribe it! *Br J Sports Med* 2009;43:3-4.
- Torabi MR, Tao R, Jay SJ, Olcott C. A cross-sectional survey on the inclusion of tobacco prevention/cessation, nutrition/ diet, and exercise physiology/fitness education in medical school curricula. *J Natl Med Assoc.* 2011 May;103(5):400-6.
- Toronto Charter for Physical Activity. In Global Advocacy Council for Physical Activity, International Society for Physical Activity and Health. <http://www.globalpa.org.uk>
- Vuori IM, Lavie CJ, Blair SN. Physical activity promotion in the health care system. *Mayo Clin Proc* 2013;88:1446-61.
- WHO Global Action plan for the prevention and control of Non-communicable diseases 2013-2020. Geneva 2013. Accessed 4/25/2015. Available at: [[http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1)]; 2013
- WHO. Global health risks: mortality and burden of disease attributable to selected major risks. 2009. Accessed 4/25/2015. Available at: [http://www.who.int/healthinfo/global\\_burden\\_disease/GlobalHealthRisks\\_report\\_full.pdf?ua=1](http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf?ua=1).
- Young F, Capewell S, Ford ES, Critchley JA. Coronary mortality declines in the U.S. between 1980 and 2000 quantifying the contributions from primary and secondary prevention. *Am J Prev Med.* 2010 Sep;39(3):228-34



# Exercise

## The Holistic Gem



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Modern times came with advances in technology and the rise of cheap and accessible electronic entertainments. Both things have further reduced the need for physical work and home has become an increasingly attractive and comfortable place.

As a consequence, today it is more difficult to find time and motivation for any kind of physical activity.

Research shows that many adults spend more than seven hours a day sitting down, at work, on transport or in their leisure time. People aged over 65 spend 10 hours or more each day sitting or lying down.

The human form is clearly designed for physical activity so we should not be surprised that in a chronic sedentary state it shows signs of failure. Inactivity is described as a “silent killer”.

Fortunately it appears that it is never too late to make some changes and experience its positive outcomes.

Extensive evidence confirms that regular physical activity promotes health and reduces the risk of developing a number of diseases. Benefits are innumerable:

### • Control of Weight

Physical activity seems to attenuate weight gain typical of the middle years and it is also effective in reducing high risk abdominal or visceral fatness. Moreover it helps by sustaining long term weight loss, more than those who rely on dietary management alone.

### • Improve Body Composition

A balanced program of physical activity limits body fat and increases or maintains lean tissue.

### • Restful Sleep

Physical activity can help to fall asleep faster and deepen the sleep. It is better avoiding exercise too close to bedtime.

### • Reduce Risk of Cardiovascular Disease (up to a 35% lower risk)

Physical activity lowers blood pressure, slows resting pulse rate, boosts high-density lipoprotein (HDL), or “good,” cholesterol and decreases unhealthy triglycerides thus reducing the risks of heart attacks and strokes. Exercise training increases the cardiovascular functional capacity and decreases myocardial oxygen demand as a result of the increased ability to use oxygen to derive energy for work.

### • Reduce Risk of Type 2 Diabetes (up to a 50% lower risk)

There is strong evidence that shows that inactivity may be a causal factor of diabetes. Regular physical activity can help to control blood glucose levels normalizing glucose tolerance and reducing insulin resistance.

### • Reduce Risk of Some Cancers

Physically active people have a lower risk for two types of cancer than people who are not active: colon and breast cancer. The strongest protective effect is for colon or colorectal cancers producing a 40-50% risk reduction, and up to a 20% lower risk for breast cancer.

### • Strengthen Bones and Muscles

Exercise training produces stronger muscles, tendons and ligaments. This improves functional capacity and allows greater independent living in older people. Exercise training involving weight bearing activity can increase bone mineral density and bone size in adolescents, helps to maintain them in adults and slow their de-

cline in older age. It can prevent or delay the onset of osteoporosis but it can't reverse osteoporosis once it has developed. It helps with arthritis and other conditions affecting the joints.

### • Improve Mental Health and Mood (up to 30% lower risk of depression)

Physical activity stimulates various brain chemicals that may leave people feeling happier and more relaxed. It makes them feel better about their appearance and themselves when they exercise regularly, which can boost their confidence and improve their self-esteem, thanks to the sense of achievement that comes from meeting physical challenges. Both short-term exercise and long-term aerobic exercise training are associated with improvements in various indexes of psychological functioning. Cross-sectional studies reveal that compared with sedentary individuals, active people perform better tests of cognitive functioning (up to a 30% lower risk of dementia), they exhibit reduced cardiovascular responses to stress and they report fewer symptoms of anxiety and depression.

### • Reduce Risk of Gallbladder Disease

It is probably due to the lower level of blood lipids.

### • Increase Chances to Live a Longer and High Quality Life (30% lower risk of early death)

Active people live longer and healthier lives than sedentary people do.

Most guidelines recommend a minimum amount of time performing aerobic physical activity, and it depends on whether the activity is a moderate-intensity physical activity or a vigorous-intensity one.

Generally a minimum length of 10 minutes of aerobic physical activity is recommended. For health promotion the best amount is 2 hours and half for week, it means 30 minutes of moderate intensity activity almost everyday.

Aerobic activity or “cardio” gets someone breathing harder and his heart beating faster.

For most people, light daily activities such as shopping, cooking, or doing the laundry don't count as exercise because their body isn't working hard enough to get their heart rate up.

Moderate-intensity aerobic activity means working hard enough to raise heart rate and break a sweat.

Some examples of these activities are walking fast, doing water aerobics, riding a bike on level ground or with few hills or playing doubles tennis.

Vigorous-intensity aerobic activity means breathing hard and fast and heart rate has gone up quite a bit. Some examples of activities that require vigorous effort are jogging or running, swimming, riding a bike fast or on hills or playing singles tennis. It's important to start slowly and gradually increase the level of activity.

Unfortunately it is estimated that only 50% of all people who initiate an exercise program will continue the habit for more than 6 months. The issue of non-adherence shouldn't be underrated because exercise is only beneficial if it is maintained for extended periods of time. Thus, it is important to develop strategies to improve exercise initiation and adherence.

Exercise could be a nice way to spend some time. It can connect people with their family or friends in a fun social setting. So a good solution could be finding a physical activity to enjoy, and just do it. If it starts becoming boring, just try something new.

## References

Article: “Statement on Exercise: Benefits and Recommendations for Physical Activity Programs for All Americans ” (Gerald F. Fletcher, MD, Chair; Gary Balady, MD; Steven N. Blair, PED; James Blumenthal, PhD, Carl Caspersen, PhD; Bernard Chaitman, MD; Stephen Epstein, MD; Erika S. Sivarajan Froelicher, PhD, MPH, RN; Victor F. Froelicher, MD; Ileana L. Pina, MD; Michael L. Pollock, PhD)

Understanding Nutrition, Ellie Whitney & Sharon Rady Rolfes, 13th edition

# Allergy Treatment

## Avoiding Allergens Versus Prescribed Drugs



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Allergies occur when there is an immune reaction to foreign substances that are normally harmless to the body. These substances are termed allergens and immune reaction occurs in a person who was previously exposed to an allergen, and thus, gained sensitivity to the specific allergen.

### Common allergens and associated diseases

There are a wide variety of substances, ranging from food, airborne particles to pharmaceutical agents that can act as potential allergens. In particular, airborne particles such as dust mites, pollen, and tobacco smoke can cause asthma and hay fever, both of which have grown rapidly over the last decade and now accounts for the majority of allergic cases (Asher, Montefort, Bjorksten, & Lai, 2006).

Asthma is characterized by a reversible obstruction, and hypersecretion of mucus in the airways. Episodic asthma attacks occur whenever an individual is exposed to an allergen and the typical symptoms of asthma attacks include shortness of breath, wheezing, chest tightness and coughing (Kaneshiro, 2014). Hay fever, also known as allergic rhinitis, in contrast, is an allergic inflammation of the nasal airway, and is commonly misinterpreted as a chronic cold (NHS Choices, 2014). Symptoms include sneezing, red or watery eyes, coughing, itchy throat and a runny nose.

In addition, food items including peanuts, milk, eggs, and nuts are another group of common allergens and can cause serious allergic reactions including anaphylaxis which is an acute, whole body and often life threatening reaction that requires an immediate medical intervention (Mustafa & Kaliner, 2014). In previously sensitized individuals, symptoms of the anaphylaxis usually appear within half an hour upon re-exposure and may include severe shortness of breath, sudden drop in blood pressure, vomiting, diarrhoea, dizziness and fainting (Mustafa & Kaliner, 2014).

Finally, there are innumerable number of substances that can cause allergic reaction when in contact with the skin and these substances are known as contact allergens. The most common contact allergens that cause contact dermatitis are poison ivy, nickel, fragrances and preservatives that are used in cosmetic industry (Usatine & Riojas, 2010). Symptoms of contact dermatitis include redness, itching, rash, bumps or blisters with fluid and skin cracking or peeling (Usatine & Riojas, 2010).

### Treatment and prevention of allergies

Currently, there is no cure for any allergic condition, and allergic symptoms can be managed by administration of antihistamines that dampens down the effect of histamine in the body. Histamine is released from mast cells and basophils when the body is exposed to a potential allergen and is responsible for the majority of allergic symptoms. In addition, treatment might also involve leukotriene receptor antagonists to reduce airway inflammation, and application of topical steroids for contact dermatitis (Beltrani, Bernstein, Cohen, & Fonacier, 2006). In extreme cases of rhinitis, immunotherapy is used to desensitize the body by injecting the allergen in appropriate doses. In extreme cases, some allergens particularly certain food items can cause anaphylaxis, which is a medical emergency as it can prove fatal and is treated by rapid administration of adrenaline (Pawankar, Canonica, Holgate, & Lockey, 2011). Individuals who are at risk of suffering from anaphylaxis normally need to carry autoinjector device containing adrenaline in case of an attack.

Although medicines can help to control symptoms of long term allergies, they are far from ideal since not only do they contribute to ever rising healthcare costs, they are also associated with side effects. For instance, anti-histamines can cause drowsiness, dizziness, nausea and vomiting. The most effective way to prevent

allergic symptoms is therefore to avoid the allergens in the first place. For instance, individuals affected by asthma can take certain measures to reduce or minimise the allergen exposure. These include keeping a safe distance from furry pets, maintaining a clean and dust free environment, and staying away from tobacco smoke. If dust mites are the culprit, beddings need to be washed in hot water regularly and zippered or 'allergen-impermeable' covers can be used to cover bed sheets and pillow cases (Nelson, 2005).

Pollen is the commonest trigger for hay fever and although, it may be difficult to avoid pollens, reducing exposure will ease the symptoms. Hay fever sufferers should stay indoors when pollen count is high, and avoid keeping fresh flowers indoors. They should also avoid cutting grass or walking in grassy areas when outdoors and if possible, wear a face mask to limit the amount of pollen reaching the airways (NHS Choices, 2014).

Contact dermatitis sufferers are encouraged to avoid skin contact with known allergens which enables the skin to heal and prevent flare-ups in future. Washing the skin with large amounts of soap and water within 15 minutes has also been shown to prevent the development of rash and other symptoms of contact dermatitis (Krucic, 2014). Individuals should avoid wearing any jewellery and belts made up of nickel containing metals, and should try to use fragrance or preservative free cosmetic products whenever possible (Usatine & Riojas, 2010).

Individuals who have food allergies are again advised to avoid ingesting food items that are causing the allergy and need to read labels of food products carefully to make sure the products don't contain the allergen (National Institute of Health, 2011). These practices will not only ease the allergic symptoms, but it will also prevent the development of life threatening anaphylaxis.

Allergic reactions that result from airborne substances and food now account for the majority of allergic cases worldwide and are associated with significant health costs in developed countries. There are a wide variety of pharmacological therapies that are available to treat allergic symptoms in the health market today, however, they are not able to cure the condition and are often associated with side effects. Identifying the allergen as early as possible and avoiding the contact with the allergen, thus, remains as the single most effective way to prevent allergic reactions. Individuals affected by allergies should be encouraged and educated in ways that they can minimise their exposure, and find a good work-social balance as well as eliminating any stress factors that might aggravate any existing allergic symptoms.

### References

- Asher, I., Montefort, S., Bjorksten, B., & Lai, C. (2006). Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC phases one and three repeat multi-country cross-sectional surveys. *Lancet*, 368(9537), 733-743.
- Beltrani, V., Bernstein, L., Cohen, D., & Fonacier, L. (2006). Contact dermatitis: A practice parameter. *American College of Allergy, Asthma and Immunology*, 97(3), 1-38.
- Kaneshiro, N. (2014). Asthma. Retrieved 03/10, 2013, from <http://www.nlm.nih.gov/medlineplus/ency/article/000141.htm>
- Krucic, G. (2014). Contact dermatitis treatments. Retrieved 03/14, 2015, from <http://www.healthline.com/health/contact-dermatitis-treatments#Overview1>
- Mustafa, S., & Kaliner, M. (2014). Anaphylaxis. Retrieved 03/10, 2015, from <http://emedicine.medscape.com/article/135065-overview#a0104>
- National Institute of Health. (2011). Food allergies: Symptoms, diagnosis, prevention and treatment. *Medline Plus*, 6(1), 24-25.
- Nelson, H. (2005). Asthma overview. Retrieved 03/11, 2015, from <http://www.aafa.org/display.cf?m?id=8&cont=9>
- NHS Choices. (2014). Hay fever. Retrieved 03/11, 2015, from <http://www.nhs.uk/Conditions/Hay-fever/Pages/Complications.aspx>
- Pawankar, R., Canonica, G., Holgate, S., & Lockey, R. (2011). WAO white book on allergy 2011-2012: Executive summary. *World Allergy Organization*.
- Usatine, R., & Riojas, M. (2010). Diagnosis and management of contact dermatitis. *American Family Physician*, 82, 249-255

# Sexually Transmitted Diseases and How They Can Affect Your Fertility

We live in a day and age where the concept of sexuality is no longer taboo. Our society has become more tolerant of various sexual behaviours, preferences and orientations. Nonetheless, most of us are still not aware enough of the psychosocial and health related issues all sexually active individuals may encounter throughout their lifetime.

The meaning of a sexually transmitted infection indicates the invasion of a micro organism, which is not necessarily causing harm. Sexually transmitted disease on the other hand, means that a harmful effect or loss of function of the invaded tissue is occurring.

You might have heard about the dangers of contracting a sexually transmitted disease (STD), but what would be going on exactly?

An STD is transmitted between persons who have engaged in an unprotected sexual relationship including vaginal, oral and anal intercourse. This includes all human beings, regardless of gender, sexual orientation and race. Intravenous drug abusers who use a needle after an infected person and all those in contact with contaminated blood are also at risk of acquiring an STD. In addition to this, an infected mother could transmit the illness to her infant during childbirth or breastfeeding.

STD symptoms are not always obvious. In fact, most diseases tend to be present yet go unnoticed. Indications of an illness however might include discomfort, pain, itchiness, foul smell, redness, swelling, ulcers, unusual discharge and sores, usually, but not always in the genital area.

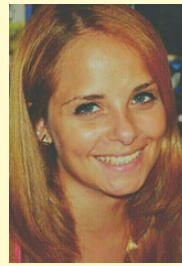
STDs can stimulate an immune response, which will make you prone to other infections and may eventually lead to infertility. Such conditions are more alarming, as they might cause irreversible damage to one's reproductive system.

- Chlamydia is one of the most common STDs caused by the bacterium *Chlamydia trachomatis*. 50% of men and up to 80% of women who have this bacterial infection experience no symptoms and hence, do not seek help. However, some reported symptoms have included pain in the lower abdomen and during urination, vaginal bleeding between menstrual cycles, painful sexual intercourse and unusual vaginal discharge. If left untreated, Chlamydia can cause pelvic inflammatory disease (PID), which is a major cause of infertility, miscarriage and ectopic pregnancy. PID causes infection of the upper female genital tract, including the uterus (womb), fallopian tubes and ovaries. The scarring of the fallopian tubes will make it difficult for the ova (eggs) to reach the uterus and hence, results in the inability to conceive.

Symptoms in men include pain during urination and unusual penile discharge. Males' fertility can also be affected by this bacterial infection. This is because the quality of sperm decreases, due to increased DNA fragmentation, decreased sperm count and higher number of sperm with defective shapes.

Chlamydia is also known to affect the eyes and cause joint pain. This infection is usually treated by a course of antibiotics your doctor will prescribe, which will last approximately 10 days. Hence, if treatment is started in the early stages of the disease, the harm done can be limited and complete recovery is possible.

- Gonorrhoea is another bacterial infection caused by the bacterium *Neisseria gonorrhoeae*. This bacterium lives in the mucous membranes of vagina, urethra, rectum, mouth, throat and eyes. Symptoms appear 2-5 days after contact. Nonetheless, symptoms might not appear until a month later. Infected men might feel pain during urination, increased urinary frequency, swollen testicles and penile discharge. Symptoms in females include abdominal pain, burning sensation during urination, itchiness and vaginal discharge. If left untreated, Gonorrhoea can lead to serious complications. In females, PID is also common, which leads to infertility due to narrowing (fibrosis) of the



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fallopian tubes. Males who do not seek medical attention may then acquire epididymitis; this is an infection in a little coiled tube found on the side of the testes which if left untreated, may also lead to male infertility. In addition to this, the Gonorrhoea infection can spread through the bloodstream to other parts of the body, causing joint pain, fever, rash, skin sores, swelling and stiffness. If detected early, Gonorrhoea can be treated by a prescribed course of antibiotics.

- Human Papilloma virus is one of the most common STDs. Usually, it causes no symptoms in either males or females, however, some types of the virus can cause genital warts. Hence, patients do not realise they are infected until they develop other health issues. Other types of this virus are responsible for cancer formation wherever the virus has been in contact with. Thus, there have been reported cases of cervical, vulval, anal, penile and oropharynx (mouth and throat) cancer. HPV can be detected and women may also develop abnormalities on a PAP smear test during examination of the cervix. Some types of surgical treatment for HPV may lead to scarring which might reduce the ability to bear children, or carry a pregnancy to term.

- Trichomoniasis vaginalis (commonly referred to as trich) is an STD caused by a protozoan parasite called *Trichomonas vaginalis*. This infection also tends to have no symptoms and hence, infected men and women do not realise they are ill and so do not seek medical treatment. Statistics have shown that women are more prone than men.

Few infected individuals present a wide range of symptoms, from a mild irritation to severe infection of the genital area. Men with trichomoniasis might feel itching or irritation inside the urethra, burning after urination or ejaculation, while women might notice itchiness, soreness, redness in the genital area. Some females also experience discomfort with urination and unusual vaginal discharge.

If left untreated, trichomoniasis might cause scarring of the fallopian tubes, reducing the ability of an infected female to be fertile. Trichomoniasis can be treated by a single course of prescribed antibiotics.

It is highly recommended that all sexually active individuals undergo regular medical checkups. If your doctor suspects that you might be infected with an STD, he/she will take a swab from the urethra (in men) or from the cervix (in women) to be tested in the lab. If detected early, most STDs require simple treatment and the outcome is generally very good. Moreover, should a diagnosis of an STD be confirmed, make sure that treatment is taken as prescribed and you have fully recovered before engaging in any form of sexual activity, so as to reduce the risk of spreading the infection to your partner.

Nonetheless, one should always practice their ABCs :

- Abstinence is the only assured protection from an STD.
- Be faithful; limiting your number of sexual partners will prevent the spread of STDs.
- Consistent condom use is crucial at all times. The male condom, being readily available and relatively inexpensive, provides an effective physical barrier against both pregnancy and the spread of STDs in both partners.





# Obesity and Weight Loss

## Obesity

The problem of obesity ranges far away from just aesthetics. Obesity is a risk factor for many other illnesses such as type II diabetes, hypertension, and hyper-cholesterolemia, which are in turn risk factors for coronary artery disease, stroke and peripheral vascular disease. Obesity can also lead to hip, knee and ankle osteoarthritis. The ideal body weight should be measured along with the height, and the formula - weight (kg) / height (m<sup>2</sup>), used to give an accurate measure of the body mass index. A BMI ranging from 20 to 25 is considered as normal, 25 to 30 is considered as over-weight, and a reading over 30 as obese. Obesity should not be treated by a physician alone, but by a multidisciplinary team. The advice of qualified dieticians should be given to overweight people.

The prevention of obesity should start by educating mothers not to start giving liquidized food to their infants before 6 months of age. It is important for the general public to adopt a careful diet on a lifelong basis which should include minimizing high calorie intake foods and drinks, especially those high in sugar or fats, whilst controlling the intake of carbohydrates, and incorporating increased dietary fibre found in fruit and vegetables. Moreover, regular exercise is something to be advised to everyone.

**Dr. Etienne Grech , MD, MMCFD, MP**

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# The Definition of Obesity in Relation to the Body Mass Index

Obesity is defined as an accumulation of an abnormal or excess amount of fat which can lead to detrimental effects on one's health.

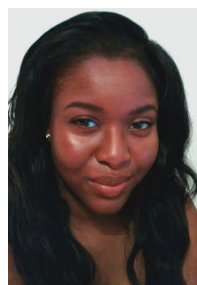
Obesity can be measured in a number of different ways, but the most common and well known is the Body Mass Index (BMI). This is a simplistic and crude way to measure obesity as it is used for all adults (over the age of 20) regardless of sex, and takes into consideration only two variables; height and weight. BMI is measured by dividing the weight in kilograms by the height squared (in meters), giving a final unit of kg/m<sup>2</sup>. This is then used to score the severity of obesity according to the table below (Euro.who.int, 2015; World Health Organisation [WHO], 2006).

Classification	BMI range - Kg/m <sup>2</sup>
Normal (healthy weight)	from 18.5 to 24.99
Overweight	from 25 to 29.99
Obese Class I (Moderately obese)	from 30 to 34.99
Obese Class II (Severely obese)	from 35 to 39.99
Obese Class III (Very severely obese)	over 40

Table 1 : WHO BMI cut off points and weight classifications (Euro.who.int, 2015)

According to WHO, the definition of being overweight is having a BMI of 25 and over, and being obese as having a BMI of 30 or over. Obesity is further classified into increasing degrees of severity which are associated with an increasing amount of co-morbidities. Nevertheless, certain groups of people, such as those of Asian descent, can still develop certain health conditions at lower obesity classes of BMI. However useful, BMI does not take into consideration any other factors; such as age, sex, ethnicity, body muscle percentage or overall fitness level. Therefore, BMI is best used in combination with visual confirmation of excessive weight (Euro.who.int, 2015).

Obesity is a major problem in Europe, with over 53% of the adult population in the European Union (EU) being overweight or obese, and 50% of adults in 18 out of the 27 EU states being overweight or obese. Childhood obesity is also very high in Europe, with the childhood obesity surveillance initiative study by WHO showing that 18.4-49% of children in Europe were obese in 2007 (OECD, 2014a; OECD, 2014b).



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Obesity has two main causes; the increase in consumption of high fat energy-dense food, and the decrease in physical activity due to a more sedentary lifestyle. Being obese can lead to an increased risk of developing many non-communicable diseases including; cardiovascular disease, type two diabetes mellitus, high blood pressure, osteoarthritis and some kinds of cancer. The main way to tackle the obesity epidemic is to increase education regarding importance of healthy eating and exercise so that people can make better food choices and adopt a healthier lifestyle increasing by physical activity. The recommended amount of exercise for adults and children are 150 minutes per week and 60 minutes per day respectively (WHO, 2000; WHO, 2014).

## References

- Euro.who.int, (2014). WHO/Europe | Body mass index - BMI. [online] Retrieved from: <http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi> [Accessed 10 Dec. 2014]
- OECD (2014a), Health at a Glance: Europe 2014, OECD Publishing. Retrieved from: [http://dx.doi.org/10.1787/health\\_glance\\_eur-2014-en](http://dx.doi.org/10.1787/health_glance_eur-2014-en)
- OECD (2014b), Obesity Update, OECD Publishing, Paris. Retrieved from: [www.oecd.org/els/health-systems/Obesity-Update-2014.pdf](http://www.oecd.org/els/health-systems/Obesity-Update-2014.pdf)
- World health Organisation (2014) Fact sheet 311- Obesity and overweight, updated 2015. Retrieved from: <http://www.who.int/mediacentre/factsheets/fs311/en/> [Accessed 10 Dec. 2014]
- World Health Organization(2000). Obesity: Preventing and Managing the Global Epidemic: Report on a WHO Consultation (WHO Technical Report Series 894). Geneva, Switzerland, World Health Organisation

Normal Weight (BMI 18.5 to 24.9)      Overweight (BMI 25 to 29.9)      Obese (Class I) (BMI 30 to 34.9)      Obese (Class II) (BMI 35 to 39.9)      Morbidly Obese (Class III) (BMI >40)





# Sedentary Lifestyle and Obesity in Children



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Childhood obesity is a medical condition which affects children and teenagers. This condition has been on a steady surge in the past years with more than one third of children and adolescents being identified as overweight or obese as of 2012 (Odgen et al. (2014)). This condition poses a spectrum of undesirable health issues for the child which impact amongst others on the morbidity, psychological and emotional aspects of life of the child.

There are numerous factors which contribute to obesity in children. Amongst these one can mention food choices which parents or children themselves adopt such as opting for food which contains an elevated component of fat and sugars.

Other significant contributing factors include a lack of physical activity and dedicating a significant amount of time on sedentary pursuits. Yet another influential factor which



proves to contribute significantly to child obesity is that of having overweight parents. Psychological factors can also instigate obesity as the child may find solace in unhealthy food options to alleviate stress and negative emotions or to cope with boredom. A last factor worth mentioning is genetics, research has demonstrated that modifications in digestive enzymes can alter the signals which alert when you're full thus inducing an increased consumption of food (Bianchini et al. (2002)).

Childhood obesity may substantially compromise the child's physical, social and emotional well being. Among the diseases to which obese children are potentially subject to one can find type 2 diabetes, metabolic syndrome, high cholesterol and high blood pressure, all contributing to the build up of plaques in arteries. This can lead to the development of a heart attack or a stroke later on in life, asthma and other associated breathing problems, sleep apnea and non alcoholic fatty liver disease (Daniels et al. (2005)). Being obese also predisposes the child to an increased risk of developing urothelial or colorectal cancers in adulthood. Obesity can also instigate social and emotional problems in children correlated to depression, behavior and learning problems, low self esteem and bullying

Treatment of obesity should be planned specifically in accordance to the necessities of every child. However, there are a number of attitudes and initiatives which children and their parents can adopt to either prevent obesity or reverse the condition. In the front line of preventive measures is an increased awareness about the body and how to nourish it appropriately. Another fundamental factor which contributes to the fight against obesity in children is that of increased physical activity which should be encouraged both by the family and by the education institutions; this for example can be achieved by instigating and encouraging the child to take up recreational activities which involve any form of physical activity such as sports or dancing rather than opting for the usual sedentary pursuits and increasing the amount of time dedicated to physical activity in schools. Also in order to sustain the fight against obesity food selling entities, especially those which target children, such as school canteens and tug shops, should provide healthier food options so as to promote the adoption of healthier nutrition habits.

## References

Bianchini, F., Kaaks, R. & Vainio, H. (2002). Overweight, obesity, and cancer risk. *The Lancet Oncology* 3, 565-574 retrieved from PubMed

Daniels, SR., Arnett, DK., Eckel, RH., Gidding, SS., Hayman, LL., Kumanyika, S., Robinson, TN., Scott, BJ., St Jeor, S., Williams, CL. (2005). Overweight in children and adolescents: pathophysiology, consequences, prevention, and treatment. *Circulation*; 111;1999-2002.

Dietz, WH. (2004). Overweight in childhood and adolescence. *New England Journal of Medicine*; 350:855-857.

Ogden, CL., Carroll, MD., Kit, BK., Flegal, KM., (2014). Prevalence of childhood and adult obesity in the United States 2011-2012. *Journal of the American Medical Association* 2014;311(8):806-814.

# Be Wise and Read The Labels!

## Calorie Intake Explained

Calories are a measure of energy needed to fuel daily activity. The recommended daily amount (RDA) is a guideline to indicate how many calories should be consumed. The significance of this value can help maintain weight; as food and drink contain calories, whilst any form of activity can burn the calories used as energy. The RDA is a rough guide as it can vary according to size, age and level of activity. Other factors can also affect how many calories you burn, such as hormones, medications (glucocorticoids) and general health conditions (NHS, 2014). Eating less than the recommended amount can cause weight loss, whereas excess consumption can cause weight gain, therefore a balance is required (Cespedes, 2013).

The average recommended intake for men is around 2500 Kcal (NHS, 2014) and those that carry out more physical activity require more calories. Men who carry out moderate exercise have been found to need 15 more calories per pound of body weight compared to men who carry out more intense exercise, who need 18 more calories per pound of weight daily. In contrast, men who carry out low level of activity appear to consume 13 calories per each pound of weight (Coleman, 2014).

The daily intake for women is slightly less than men. For younger women, the calorie intake will mainly contribute to accommodate for more muscle mass and physical activity. The table below shows the calorie variability and range according to gender and age.

	Age Range	Average energy requirements (kcal/day)
Girls/boys	6	1,500-1,600
	12	2,000-2,200
	17	2,300-2,900
Women/men	30-39	2,000-2,600
	50-59	2,000-2,500
	70-79	1,800-2,300

**Table 1:** EFSA table of recommendations (<http://www.efsa.europa.eu/en/press/>)



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The initiation of bad diet habits can start early. Infants who are overfed are more likely to develop a poor diet regimen later in life, for example, children as young as 4 months can develop a higher risk of obesity. Furthermore, it has been seen that adults in developed countries are at risk for being overweight as the diet in western countries contain mainly dairy, meat and sugar with increased portions as well more availability to fast food, compared to, for example the varied low in fat diet of Asian countries (Nutrition MD).

Food labels can often be confusing to the consumer. The labels are there to assist the public with making informed choices when buying food. Its purpose is to educate the consumer about the calories they intake to achieve a recommended amount and to be able manage their weight (Arsenault). Labels on products purchased in supermarkets are obligated to state the calories, however, when products are printed "per 100g", though only containing "60g", it can create a state of confusion for the consumer. Therefore it is important to read the labels carefully, to avoid misinterpretation. In western countries such as America, eating out is a major trend and social convenience. Therefore, the National Restaurants Association are attempting to enforce more labeling on menus, in the hope to bring additional health benefits by providing the customer with more information to make an informed choice and help the prevention of obesity and other serious health conditions (Trust for America's health and Robert Wood Johnson Foundation).

### References

- Arsenault, J. E. (n.d.). Can Nutrition Labeling Affect Obesity? Retrieved december 11, 2014, from Choices: <http://www.choicesmagazine.org/magazine/article.php?article=140>
- Cespedes, A. (2013, october 21). Daily Recommended Caloric Intake for Women. Retrieved december 14, 2014, from livestrong: <http://www.livestrong.com/article/360444-daily-recommended-caloric-intake-for-women/>
- Coleman, E. (2014, 01 27). Guidelines for Men's Daily Calorie intake. Retrieved december 14, 2014, from livestrong: <http://www.livestrong.com/article/415222-guidelines-for-mens-daily-calorie-intake/>
- efsa. (2013, jan 10). EFSA sets average requirements for energy intake. Retrieved december 11, 2014, from [efsa.europa.eu](http://www.efsa.europa.eu/en/press/news/130110.htm): <http://www.efsa.europa.eu/en/press/news/130110.htm>



# Comfort Eating May Be a Sign of Underlying Psychological Issues

Hunger and the need to quench it are natural and familiar phenomena. Eating may also provide a sense of gratification. Over-indulgence in food as a means of relieving negative emotions, leads to an altered habit or a disorder with attendant risks. Comfort eating is a disordered form of eating habit but not a classical eating disorder. It is consumption of meals termed comfort foods such as cookies, chocolates, ice cream, which are high in fats and calorie content in the absence of hunger stimulus, but as a way of dealing with probably overwhelming emotional or psychological difficulties.

Most times it could be a precursor or consequence of various eating disorders or an indication of depression resulting from stress encountered frequently (Scheel, 2013). People faced with this problem see it as a management strategy. Studies have shown it is mostly prevalent and triggered by negative emotions in women while in men it is sometimes triggered by positive emotions.

Psychological, neurobiological and environmental factors have been implicated as interwoven underlying causes of comfort eating (Grimm & Steinle, 2011). It has been shown that some events leave residual negative emotions that can lead to disordered eating habit. Post-traumatic stress disorder (PTSD) and other psycho traumas have been shown to have a direct positive relationship with comfort eating and other forms of eating disorders. Thus, the affected person eats to relieve negative feelings associated with the recall of certain events (Scheel, 2013) and diverts attention away from perceived threat to self esteem, anxiety, and towards rewarding and pleasurable stimulus like food (Spoor & Bekker, 2007).

Dysregulation of neurotransmitter system (dopamine, opioid, serotonin, benzo-diazepine) located in the reward and pleasure centre of the brain has been associated with comfort eating and response to stress from the standpoint of neurobiology (Jastreboff, et al. 2010). Lesions and tumors of the areas of the brain( prefrontal area, amygdale, etc.) associated with personality emotions, learning, memory, have been linked to altered eating behaviour and psychological issues and more so the gene discovered to be coding for fear memories have been linked with anxiety, other psychological problems and altered eating habits.

Stressful conditions occurring during pregnancy have been linked to offspring stress vulnerabilities due to cognitive and emotional problems.

Comfort eating has been noted to be a primary cause of overweight and obesity in numerous cases among other factors. Obesity is a medical condition characterized by excessive fat accumulation in the body with a negative effect on the health. It is one of the prevalent and pressing health issues of the present century especially in developed countries.

In a study involving some women with obesity, post-traumatic stress disorder was linked with the risk of obesity through continuous eating to relieve the emotion (Mason, et al. 2014). Women were more likely than men to have obesity as a result of psychological problems. Psychological problems such as anxiety, depression and other forms showed an increasingly positive correlation with overweight and obesity and comfort eating. Systemic diseases such as cardiovascular diseases, dia-



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betes mellitus type 2, and a host of other metabolic derangements are complications that arise if the obese condition is not controlled.

Finally, psychological factors among others predispose one to comfort eating which in turn can lead to debilitating health conditions. Instead of indulging in comfort food as a way of responding to stress, other avenues of emotional management should be sought such as yoga, frequent exercise, psychotherapy and a lot more.



## References

Eleanor R Grimm, Nanette I Steinle.(2011) Genetics of eating Behavior: Established and emerging concepts. doi:http://dx.doi.org/10.1111/j.1753-4887.2010.00361.x. 52-60

Jastreboff A, Potenza M, Lacadie C, Hong K, Sherwin R and Sinha R. (2010) Body mass index, metabolic factors and striated activation during stressful and neutral relaxing states. A fMRI study. *Neuropsychopharmacology*, 36(3), 627-637

Judy Scheel, Ph D, L C S W March 5 2013. *Psychology Today*--When Food is Family.

Spoor S T, Bekker M H et al.(2007) Relations between negative affect coping and emotional eating. *Appetite*, 48, 368-376

Susan M Mason, Alanj Flint, DPH, MD, Andrea L Roberts Ph D et al.(2014) Post-traumatic stress disorder symptoms and food addiction in women by timing and type of trauma exposure. *Jama Psychiatry*; 71(11):1271-1278.



# The Mediterranean Diet as an Intangible and Sustainable Food Culture

Since last November 16th, 2010, the Mediterranean diet was inscribed on the UNESCO's Representative List of Intangible Cultural Heritage of Humanity (UNESCO; 2010). The objective of this initiative was to safeguard the immense legacy representing the cultural value of the Mediterranean diet, as well as to share and disseminate its values and benefits internationally.

The Mediterranean diet is a cultural, historical, social, territorial and environmental heritage transmitted from generation to generation for centuries, and it is intimately linked to the lifestyles of the Mediterranean peoples throughout their history (Bach-Faig, A et al, 2011; Willet WC et al, 1995). A legacy passed on a temporal and spatial constant flow, a living heritage, unique and outstanding cultural spaces, uses promoting respect for cultural diversity and human creativity, expression of sociability and communication between their villages and individuals, a way to reinforce individuals identities in their places of origin, an integrative element of communities with the nature and the history, a defense mechanism of the agriculture and sustainable rural development, the landscape and environment of our territory.

Public Health also represents a major element in the sustainability appraisal of the Mediterranean Diet. The Mediterranean diet, besides its traditional benefits of lowering the risk of cardiovascular diseases, diabetes and cancer, has other numerous health benefits that are currently fields of research, such as immunity, allergic diseases, the psyche and even quality of life. The Mediterranean diet has an international projection and is stated as the healthiest and the most sustainable eating pattern on the planet and is known to be a key player in the public health nutrition field globally but especially in the Mediterranean area.

Relevant prospective epidemiological studies (Trichopoulou A, Bamia C and Trichopoulos D; 2009) and some clinical or community trials, such as the PREDIMED study (Martinez-Gonzalez MA, Bes-Rastrollo M, Serra-Majem L, Lairon D, Estruch R and Trichopoulou A; 2009), have recently increased the evidence regarding the quality of the Mediterranean diet. From the first systematic review of the evidence from the Mediterranean diet interventions conducted a few years ago, the Mediterranean diet showed favourable effects on lipoprotein levels, endothelium vasodilatation, insulin resistance, metabolic syndrome, antioxidant capacity, myocardial and cardiovascular mortality, and cancer incidence in obese patients and in those with previous myocardial infarction (Serra-Majem L, Roman B and Estruch R; 2006).

From the second published systematic review, a meta-analysis by Sofi et al in 2008, revisited in 2010 and 2013 ((Sofi F, Cesari F, Abbate R, Gensini A., 2008)) on the evidence of the relationship between Mediterranean diet and health status some interesting figures have been reported: a two point increase in the adherence score (or 20% increase in the MD adherence) was significantly associated with a 9% reduction in overall mortality; 10% reduction in cardiovascular disease mortality; 6% reduction in neoplasm incidence or mortality; and 13% reduction in incidence of Parkinson's disease and Alzheimer's disease was discovered in the general population.

Furthermore, PREDIMED trial (Razquin C, Martinez JA, Martinez-Gonzalez MA, Bes-Rastrollo M, Fernández-Crehuet J, Marti A.; 2010) results pointed out that the Mediterranean diet, especially rich in virgin olive oil, is associated with higher levels of plasma antioxidant capacity. The plasma total antioxidant capacity is related to a reduction in body weight after 3 years of intervention in a high cardiovascular risk population with a Mediterranean-style diet rich in virgin olive oil. Furthermore, PREDIMED results suggest there is no rationale to maintain the fear that Mediterranean food items rich in fats of vegetable origin (olive oil or tree nuts) may cause weight gain or be responsible for an increased risk of obesity, provided that the energy intake does not exceed energy expenditure (Buckland G, Bach A and Serra-Majem L; 2008). The Mediterranean diet has been related in the PREDIMED study to a lower incidence of type II diabetes, both at the nut and the oil virgin olive oil group (Salas-Salvadó J et al, 2014), and of course, its uses in the primary prevention of CVD have been finally demonstrated (Estruch R et al; 2013).

The traditional Mediterranean diet is the heritage of millennia of exchanges in the Mediterranean basin region that has defined and characterized the eating habits of the countries in those regions until the mid twentieth century, but currently it is progressively being abandoned (Da Silva R, Bach-Faig A, Raidó Quintana B, Buckland G, Vaz de Almeida, Serra-Majem L., 2009) due to many factors of the western-type economy and urban and technological society as well as the globalization of production and consumption. This food culture now has three serious threats: 1) American fast food culture based on meat, refined grains, potatoes, ice cream, candies and beverages high in sugar, 2) the economic crisis affecting in particular the most disadvantaged groups, and affecting key food groups of the Mediterranean diet such as fruits, vegetables, virgin olive oil, nuts and fish, reducing their consumption, or inversely, refined grains or potatoes or and sugars, increasing their consumption, and 3) the promotion of high protein diets, also prescribed by doctors and specialists, as a tool for weight loss or maintenance, with a major impact on health.

The erosion that can cause these threats, especially economic, must be countered with actions based on nutritional education, with the commitment that neither cost nor unfounded food choices should be a barrier to the availability of basic foods of the Mediterranean diet: olive oil, fruits, vegetables, grains, dairy, nuts or fish. Governments thus, need to compromise with appropriate actions that preserve our traditional and cultural knowledge, and leads to the diversity of foods and diets not only for the health benefits that could provide short and long term effects.

The environmental consequences of food systems are on public health agendas. Foods are produced, processed, distributed, and consumed, and these actions have consequences for both human health and the environment (Gussow JD and Clancy KL; 1986). Furthermore, food production is also inevitably a driver of environmental pressures, particularly in relation to climate change, water use and toxic emissions (Hertwich, E. et al; 2010). Greenhouse gas emissions (GHG), such as CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O which are related to climate change are also responsible for global warming. Agriculture is one of the main contributors to the emissions of the two last gases mentioned whilst other parts of the food system contribute to carbon dioxide emissions due to the use of fossil fuels in processing, transportation, retailing, storage, and preparation. Food items differ substantially in their environmental footprints, which among many other descriptors, can be measured in terms of energy consumption, agriculture land use, water consumption or GHG emissions (Carlsson-Kanyama A and González AD; 2009). Animal-based foods are by far the most land and energy intensive compared to foods of vegetable origin (Baroni L, Cenci L, Tettamanti M and Berati M; 2007), and MD has important benefits on the four major parameters to assess the environmental impact of the diet of a population:



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land use for agriculture, greenhouse gas emissions, energy use and water use according to a recent study conducted by Saez-Almendros et al., in Table 1 Sáez Almendros S, Obrador B, Serra-Majem L and Bach-Faig A.; 2013). Thus, dietary patterns can substantially vary resource consumption and the subsequent impact on the environment as well as on the health of a given population (Carlsson-Kanyama A and González AD; 2009).

The Mediterranean dietary pattern is presented as not only a cultural model but as well a healthy and environmentally friendly model, whose adherence would have, in addition to the well-known benefits on public health, significantly contribution to a greater sustainability of the food production and consumption (figure 1).

	MDP	SCP <sub>FB</sub>	SCP <sub>CS</sub>	WDP	Current real pressure
<b>Agricultural land use (10<sup>3</sup> Ha year<sup>-1</sup>)</b>	8 365	19 874	12 342	33 162	15 400
<b>Energy consumption (TJ year<sup>-1</sup>)</b>	239 042	493 829	285 968	611 314	229 178
<b>Water consumption (Km<sup>3</sup> • year<sup>-1</sup>)</b>	13,2	19,7	13,4	22,0	19,4
<b>Greenhouse gas emissions (Gg CO<sub>2</sub> eq • year)</b>	35 510	125 913	72 758	217 128	62 389

**Figure 1:** Environmental footprints for the Mediterranean Diet (MDP), the Western pattern (WDP) and the two estimates of current Spanish pattern (SCP<sub>FB</sub> and SCP<sub>CS</sub>) for the total Spanish population, and estimated current real pressure for each footprint. The subscripts FB and CS refer to estimates derived from food balance sheets and from consumption surveys, respectively.

## References

Bach-Faig A, Berry EM, Lairon D, Reguant J, Trichopoulou A, Dernini S, Medina FX, Battino M, Belahsen R, Miranda G, Serra-Majem L; on behalf of the Mediterranean Diet Foundation Expert Group. (2011) Mediterranean diet pyramid today. Science and cultural updates. *Public Health Nutr.* 14(1A), 2274-2284.

Baroni L, Cenci L, Tettamanti M, Berati M (2007) Evaluating the environmental impact of various dietary patterns combined with different food production systems. *Eur J Clin Nutr.* 61:279-286.

Buckland G, Bach A, Serra-Majem L (2008). Obesity and the Mediterranean diet: a systematic review of observational and intervention studies. *Obes. Rev.* 9, 582-593.

Carlsson-Kanyama A, González AD (2009) Potential contributions of food consumption patterns to climate change. *Am J Clin Nutr.* 89:1704S-1709S.

Da Silva R, Bach-Faig A, Raidó Quintana B, Buckland G, Vaz de Almeida, Serra-Majem L. (2009) Worldwide variation of adherence to the Mediterranean diet, in 1961-1965 and 2000-2003. *Public Health Nutr.* 12(9A), 1676-1684.

Estruch R, Ros E, Salas-Salvadó J, Covas MI, Corella D, Arós F, Gómez-Gracia E, Ruiz-Gutiérrez V, Fiol M, Lapetra J, Lamuela-Raventós RM, Serra-Majem L, Pintó X, Basora J, Muñoz MA, Sorlí JV, Martínez JA, Martínez-González MA; PREDIMED Study Investigators. (2013) Primary prevention of cardiovascular disease with a Mediterranean diet. *N Engl J Med.* 4;368(14):1279-90.

Gussow JD, Clancy KL: Dietary guidelines for sustainability. (1986) *J Nutr Educ* 18:1-5.

Martinez-Gonzalez MA, Bes-Rastrollo M, Serra-Majem L, Lairon D, Estruch R and Trichopoulou A. (2009): Mediterranean food pattern and the primary prevention of chronic diseases: recent developments. *Nutr. Rev.* 67 (Suppl 1), S111-S116.

Razquin C, Martinez JA, Martinez-Gonzalez MA, Bes-Rastrollo M, Fernández-Crehuet J, Marti A. (2010) A 3-year intervention with a Mediterranean diet modified the association between the rs993960\* gene variant in FTO and body weight changes. *Int J Obes (Lond).* 34(2), 266-72

Sáez Almendros S, Obrador B, Serra-Majem L, Bach-Faig A. (2013) Environmental footprints of Mediterranean versus Western dietary patterns: beyond the health benefits of the Mediterranean diet. *Environ Health.* 30;12:118

Salas-Salvadó J, Bulló M, Estruch R, Ros E, Covas MI, Ibarrola-Jurado N, Corella D, Arós F, Gómez-Gracia E, Ruiz-Gutiérrez V, Romaguera D, Lapetra J, Lamuela-Raventós RM, Serra-Majem L, Pintó X, Basora J, Muñoz MA, Sorlí JV, Martínez-González MA. (2014) Prevention of diabetes with Mediterranean diets: a subgroup analysis of a randomized trial. *Ann Intern Med.* 7;160(1):1-10

Serra-Majem L, Roman B, Estruch R. (2006) Scientific evidence of interventions on the Mediterranean Diet: a systematic review. *Nutrition Rev.* 64, 27-47.

Sofi F, Cesari F, Abbate R, Gensini A. (2008) Respect to Mediterranean Diet and Health, *British Medical Journal.* 337,1136-1344.

Trichopoulou A, Bamia C and Trichopoulos D (2009): Anatomy of health effects of Mediterranean diet: Greek EPIC prospective cohort study. *BMJ.* 338, 2337

UNEP: Assessing the Environmental Impacts of Consumption and Production: Priority Products and Materials, A Report of the Working Group on the Environmental Impacts of Products and Materials to the International Panel for Sustainable Resource Management. Hertwich, E., van der Voet, E., Suh, S., Tukker, A., Huijbregts M., Kazmierczyk, P., Lenzen, M., McNeely, J., Moriguchi, Y. (2010)

UNESCO. (2010). Representative List of the Intangible Cultural Heritage of Humanity. <http://www.unesco.org/culture/ich/en/RL/00394> [accessed June 2012].

Willet WC, Sacks F, Trichopoulou A, Drescher G, Ferro-Luzzi A, Helsing E, et al. (1995): Mediterranean diet pyramid: a cultural model for healthy eating. *Am. J. Clin. Nutr.* 61 (Suppl), 1402S-1406S.

# Energy Balance as a Framework for Weight Management Interventions

## The Energy Balance Theory

Energy balance theory is a scientifically-based framework by which caloric intake, expenditure and storage can be used to understand body mass change and predict weight change over time. The foundation of energy balance theory is the first law of thermodynamics, which states that, within a closed system energy cannot be created or destroyed. The notion of energy balance as the determinant of weight change has been around for decades. However, the concept has been misunderstood and misrepresented due to the multivariate nature of the relationships among intake, expenditure and storage. The fundamental energy balance relationship that a change in energy intake will equal the sum of changes in energy expenditure and energy stores ( $\Delta E_{\text{intake}} = \Delta E_{\text{expenditure}} + \Delta E_{\text{stores}}$ ) is not a static relationship, but is often presented as a series of discrete components. In fact, there is significant interaction among the components when one changes. These interactions, currently investigated as “compensatory changes”, make for a vibrant and robust relationship that challenges our understanding of physiology, behavior and environment. The usefulness of the energy balance framework in understanding weight change is exemplified in the 2011 study 1 in which the estimated reduction in occupational energy expenditure of the US population over the last 40 years was used to predict the change in the population’s body weight over the same period of time. The results were staggering. The modeling indicated that daily occupational energy expenditure has dropped since 1960 by about 140 calories in men and about 120 calories in women. Using these numbers, the predicted mean weight for men over the period from 1960 to 2003-2006 would increase to 89.7 kg. The actual mean weight for that period was 91.8 kg. The predicted results for women were similarly closely matched to the actual change in weight. This study illustrates the critical importance of understanding obesity and body weight management from a scientifically-based perspective while recognizing the individual, social and environmental factors that modulate the primary energy balance components.

## The Energy Flux Component of Energy Balance Framework

The general framework of energy balance requires recognition that biological, social and environmental cues demand, over time, a relatively high rate of flow, or flux, of energy through the body’s metabolic pathways 2. The concept that there is a limited range of “optimal sensitivity” - a range at which body weight is maintained through reciprocal compensatory changes between caloric intake and expenditure - is a viable explanation of why sedentary individuals have difficulty in maintaining a stable weight. The inability for most individuals to avoid weight regain, and the weight gain by the majority of the population, supports the concept of an optimal range of energy flux.

## Physical Activity as a Means to Maintain Balance at a High Flux

Physical activity makes up about 20-30 percent of total daily energy expenditure and is the only voluntary mechanism to maintain body weight at a high energy flux. One study examining the effect of modern technology on daily energy expenditure 3 showed that the American Amish population who live similarly to those of the 19th century have higher energy expenditures of 400 to 600 kcals/day 4 as compared to the modern urban lifestyle in developed countries 5. Cumulatively, studies indicate that there is a strong relationship between low levels of physical activity and high and increasing body weights 6-10. However, even studies that do not show significant body weight change through increasing physical activity indicate that increased energy expenditure can reduce body fat (one mechanism to reduce energy stores) and a high likelihood of enhanced metabolic activity.

Energy balance is a scientifically-based framework for understanding the relationships among energy intake, expenditure and storage. While there are compensatory interactions among these components, evidence is accumulating that the energy state at which energy balance is maintained has an impact on the “sensitivity” of the relationships of the energy bal-



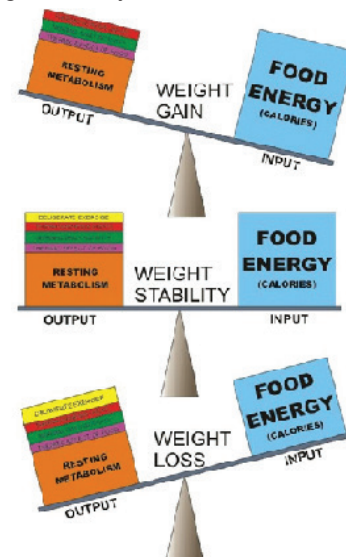
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ance components. Utilizing the energy balance framework when designing and implementing weight management interventions should enhance effectiveness and sustainability for life-long body weight stability.



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## References

- Bassett DR, Schneider PL, Huntington GE. Physical activity in an Old Order Amish community. *Med Sci Sports Exerc* 2004;36:79-85.
- Besson H, Ekelund U, Luan J, et al. A cross-sectional analysis of physical activity and obesity indicators in European participants of the EPIC-PANACEA study. *International journal of obesity* 2009;33:497-506.
- Blundell JE, Caudwell P, Gibbons C, et al. Role of resting metabolic rate and energy expenditure in hunger and appetite control: a new formulation. *Disease models & mechanisms* 2012;5:608-13.
- Church TS, Thomas DM, Tudor-Locke C, et al. Trends over 5 decades in U.S. occupation-related physical activity and their associations with obesity. *PLoSOne* 2011;6:e19657.
- Hankinson AL, Daviglus ML, Bouchard C, et al. Maintaining a high physical activity level over 20 years and weight gain. *JAMA* 2010;304:2603-10.
- Hill JO. Understanding and addressing the epidemic of obesity: an energy balance perspective. *Endocrine reviews* 2006;27:750-61.
- May AM, Bueno-de-Mesquita HB, Boshuizen H, Spijkerman AM, Peeters PH, Verschuren WM. Effect of change in physical activity on body fatness over a 10-y period in the Doetinchem Cohort Study. *The American journal of clinical nutrition* 2010;92:491-9.
- Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. Changes in diet and lifestyle and long-term weight gain in women and men. *The New England journal of medicine* 2011;364:2392-404.
- Ng SW, Popkin BM. Time use and physical activity: a shift away from movement across the globe. *Obesity reviews : an official journal of the International Association for the Study of Obesity* 2012;13:659-80.
- Waller K, Kaprio J, Kujala UM. Associations between long-term physical activity, waist circumference and weight gain: a 30-year longitudinal twin study. *International journal of obesity* 2008;32:353-61.



# Long Term Weight Control

## Gradual vs Rapid Weight Loss

It is natural for anyone trying to lose weight to have a desire to lose it very quickly, but successful weight-loss strategies embrace small changes, moderate losses, and reasonable goals. The desired goal of a weight reduction is to lose adipose tissue, but other tissue such as muscle can be lost if it is not applied correctly.

The most important part of a dietary intervention is for the calories consumed to be less than the calories expended. This ratio can be accomplished by either reducing energy intake, increasing energy expenditure through exercise, or a combination of these approaches. A reasonable suggestion is to increase activity and reduce food intake enough to create a deficit of 500 to 1000 kilocalories per day for adults with a BMI of 35 or greater and 300 to 500 kilocalories per day for adults with a BMI of 27 to 35.

Safe and effective weight-loss programs should include:

- A plan to keep the weight off over the long run;
- Guidance on how to develop healthier eating and physical activity habits;
- Ongoing feedback, monitoring, and support;
- Low and steady weight-loss goals—usually 0.5 to 1 Kg per week (though weight loss may be faster at the start of a program). People who lose weight gradually and steadily are more successful at keeping weight off.

**FAD DIETS are not the best way to lose weight and keep it off!** (Whitney & Rolfes, 2011).

They often promise quick weight-loss if you strictly reduce what you eat or avoid some types of foods without providing all the nutrients that your body needs. Rapid weight loss usually means excessive loss of lean tissue, a lower basal metabolic rate (BMR), and a rapid weight gain to follow in the next few months (Gropper & Smith, 2013). Adverse reactions can be headaches, nausea, and dizziness. In addition, restrictive eating may create stress or foster unhealthy behaviors of eating disorders. Losing more than 1.5 Kg a week after the first few weeks may increase the chances of developing gallstones while being on a diet of fewer than 800 calories a day for a long time may lead to serious heart problems.

**SKIPPING MEALS make people feel tired, over-hungry and could give them headaches.** People who have more chaotic eating habits often end up eating more throughout the day. In



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particular, studies show a link between skipping breakfast and obesity.

**PHYSICAL ACTIVITY is essential for good health and healthy weight management.**

It increases the amount of energy you are using, it increases the lean tissue (muscle) mass, metabolic rate rises accordingly, and this supports continued weight loss. Metabolism remains elevated for several hours after vigorous and prolonged exercise. Studies have shown that, when overweight, losing (and keeping off) 5-10% of your body weight can significantly reduce your risk of heart disease, stroke, diabetes and some types of cancers. It can:

- Lower high blood pressure;
- Improve control of blood sugar levels in people with diabetes;
- Reduce the risk of angina (heart condition causing chest pain);
- Improve blood cholesterol levels;
- Ease lower back and joint pain.

Healthy weight loss is not just about a “diet” or “program”. It is about an ongoing lifestyle that includes long-term changes.

### References

*Advanced nutrition and human metabolism*, Gropper, S.S., Smith, J.L., 5th edition (2013);

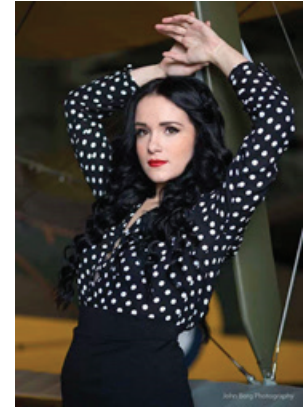
*Understanding nutrition*, Whitney, E., Rolfes, S. 13th edition (2011).





# The Benefits of Weight Loss

“*She was always beautiful. Lately, she decided to transform herself into a healthier, fitter, and faster individual!*”



Ms. Francesca Gauci is a 20 year old, final year nursing student who resides in St. Julians, Malta.

**Georgiana Farrugia, the EUROMEDS Editor-in-Chief asks her . . .**

**Q: Have you always suffered from weight issues or was this a more recent problem? What was your Body Mass Index prior to your lifestyle change?**

A: As a youngster, I did not have a body habitus that was considered to be over-weight or obese. On the contrary, I was super-skinny until the age of 9. However, as I grew up, I encountered problems that affected me both on a physical and an emotional level . . . Unfortunately, food was the only companion that I used to turn to for comfort. I considered it to be my holy grail. As a result, I put on a significant amount of weight in a period of one year. I weighed 110 kilograms and my Body Mass Index (BMI) was of 41.5. Soon after, I decided to make a change in my lifestyle, as well as in my overall approach to life...I eventually lost 45 kilograms in just 5 months. My current BMI is 23.1 and I feel so much better!

**Q: Did you suffer from any health issues or encounter fitness-related difficulties as a result of putting on weight?**

A: Certainly all the excess fat I put on throughout the years has affected my health in so many ways, and eventually triggered a lot of medical problems. At a very young age, I suffered from high blood pressure, diabetes and high blood cholesterol. Apart from my bad eating habits, I used to do no physical activities whatsoever. My breathing was also terrible...In fact I used to get frequent asthma attacks. I also had acne. Honestly, it couldn't get any worse, even more so due to the fact that I was being bullied about my appearance. As a result, I started showing early signs of depression and anxiety.

**Q: What inspired you, or perhaps necessitated the need to initiate a weight-loss program?**

A: First and foremost, all my medical issues were affecting me negatively as I previously mentioned. Moreover, I really hated the fact that I had no social life. I used to engage in minimal interaction with people as I opted to stay at home since I felt pretty useless that I couldn't do anything I love. If I wanted to try any type of sport I would easily give up as I had no energy to participate for more than 15 minutes maximum. There are a lot of other factors that made me realise that I'm not living my life the way I am supposed to be...In fact, now that I look back on it, at the time I was just a girl who was existing through life miserably.

**Q: As a nursing student, but also from your personal experiences, what do you classify as being the major benefits of weight loss?**

A: Besides getting in shape and obtaining the body type I always dreamt about, losing weight improved my health and my way of living. In my opinion weight loss isn't just about going down a dress size or two. It is about improving our lives holistically and in turn, making us feel much better. I believe that we always have to strive to bring about the best version of ourselves! By losing excess fat, I decreased the risk for sustaining or developing serious chronic conditions such as high blood pressure, heart disease, type 2 diabetes, osteoarthritis and low back pain. Adopting an active lifestyle definitely was a fruitful choice, even though when I started implementing it, I was unsure that I will have enough courage to pursue my long-term weight control plan.

**Q: In your case, which were the most successful weight loss techniques? And what advice do you give to those individuals that are currently struggling with losing weight but want to transform themselves for the better, just like you have done?**

A: I opted to decrease my food portions, drink plenty of water, incorporate more fruit, vegetables and protein into my diet, whilst decreasing consumption of unhealthy carbohydrates and fats. I also realized the importance behind eating small portions of healthy food every 2 to 4 hours so as to boost my metabolism. I also subscribed to a local gym. Initially, I worked out for 30 minutes daily but now, I am following an hour and a half of intense training every day. My current target is to replace the remaining fat and residual toxins in my body with muscle. These strategies helped me a lot in changing my lifestyle as well as losing the excessive weight that was creating so much emotional and physical burden.

As for all those individuals that are currently struggling with weight loss, I have a few words with a true and strong meaning; Never give up and always believe in yourself. Also, bear in mind that the difference between those who succeed and those who fail lies in staying focused, and having faith and determination that one day you will reach your targets. I hope I can serve as an inspiration to many European citizens; considering I went from being a depressed, obese girl to placing 5th in the prestigious modeling contest of Miss Malta. If I did it, you can do it too.

# Nutritional Information and Simple Exercises for a Healthier Lifestyle

It has been demonstrated that our nutritional choices would influence our health, growth and development. A large amount of adult chronic diseases are the consequence of bad dietary habits. People who want to change their lifestyle can find many guidelines and the Healthy Eating Pyramid is one of these.

## Healthy Eating Pyramid

The Healthy Eating Pyramid sits on a foundation of daily exercise and weight control, because both are important in our purpose to stay healthy.

The other bricks of the Pyramid include:

### Whole Grains

There are two types of grains - whole grains and refined grains. At least half of the grains we eat should be whole grains, such as whole-wheat bread, whole-grain cereals and crackers, oatmeal and brown rice.

Healthier foods higher in carbohydrates include ones that provide dietary fiber and whole grains as well as those without added sugars.

Our body uses carbohydrates to make glucose which is the fuel that gives us energy.

The body cannot digest whole grains as quickly as it can highly process refined grains. Better control of blood sugar and insulin prevents the development of type 2 diabetes and heart disease.

Moreover they are nutritional sources of B vitamins, iron, magnesium, selenium, and fiber.

### Healthy Fats and Oils

Unsaturated fats or "healthy" fats are usually liquid at room temperature.

Monounsaturated and polyunsaturated fats help to maintain healthy cholesterol levels and are found in vegetable oils such as olive, rapeseed and sunflower oil, avocado, nuts and seeds. Polyunsaturated fats can also be broken down into two types:

- Omega-6 polyunsaturated fats: These fats are essential fatty acids that our bodies need, but cannot make.
- Omega-3 polyunsaturated fats: Particularly from fish sources, they may protect the heart from sudden and potentially deadly rhythm problems.

On the contrary, high intakes of saturated fats increase the level of LDL or "bad" cholesterol in the blood.

"Bad" cholesterol can build up in our blood vessels and cause them to narrow, which can increase the risk of heart attacks or strokes. Saturated fats can be found in high-fat cheeses, high-fat cuts of meat, whole-fat milk and cream, butter, palm and coconut oils.

### Fruits and Vegetables

They are simple carbohydrates, a natural source of glucose. Fruits and vegetables help to fill in the gaps of missing nutrients. Some of these nutrients are vitamin C, important for maintaining healthy body tissues, vitamin A; for maintenance of



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vision, skin and immune system, folate; needed for the formation of healthy blood cells, potassium, which helps to maintain a healthy blood pressure and which is involved in the normal function of the nervous system and magnesium, which helps to maintain normal bones and teeth.

A good attitude is trying to change constantly colour and variety.

### Nuts, Seeds, Beans, Tofu

They are important sources of protein, fibers, vitamins and minerals, moreover many kinds of nuts contain healthy fats.

### Fish, Poultry and Eggs

They are a complete protein or "high quality protein" source, which provide all of the essential amino acids. Proteins are made up of amino acids and some of these amino acids cannot be made by our bodies; that is why they are known as essential amino acids. It is essential to provide these to the body through the diet.

### Dairy, Vitamin D / Calcium Supplements

There are some health benefits from modest dairy intake, while high intakes are associated with increased risk of prostate and ovarian cancers. Milk and cheese contain a lot of saturated fat; cheese is also high in sodium. Taking a multivitamin or vitamin D supplement to get enough vitamin D could be a good solution.

### Use Sparingly:

Red meat, processed meat, butter, because they contain a lot of saturated fats, refined grains, potatoes, sugary drinks, sweets and salt, which plays a role in high blood pressure.

The Healthy Eating Pyramid does not give specific advices about the daily amount of specific foods. That is because it depends on body size and physical activity. The basic guideline to remember is that a healthy diet includes more foods from the base of the pyramid than from the higher levels.

## Tips to Stay Healthy

### 1. Drink Plenty of Fluids

European recommendations suggest at least 1.6 litres of fluid per day for women and 2 litres per day for men. The human body is nearly two-thirds water and so it is really important to consume enough fluid to stay hydrated and healthy. Fatigue, headaches and low performance can arise from fluid deficiency.

### 2. Eat Regularly

Skipping meals, especially breakfast, can lead to out-of-control hunger, often resulting in helpless overeating. A person should have three proper meals per day plus two small snacks, the first late in the morning and the second in the afternoon. Fruits and vegetables are perfect snacks.

### 3. Use a Smaller Plate

Use a smaller plate at meals can help with portion control. That creates the illusion to eat a bigger amount of food without overeating.

### 4. Skip Salt

Healthier alternatives are spices, garlic, vinegar, or lemon juice. Herbs like basil, curry, ginger, or rosemary are good choices.

### 5. Food Hygiene

Four basic food safety principles work together to reduce the risk of food-borne illness: clean (hand, food and surfaces), separate (when shopping and when preparing and serving), cook and chill, both at safe temperatures.

### 6. Make Active Choices Throughout The Day

Every little bit of activity is better than nothing.

Take the stairs instead of the elevator, go for a 10-minute walk on lunch break, or park further away from work and walk are as healthy choices.

For the ones who have time to dedicate to physical activity, a good weekly program should include:

At least 30 minutes of daily aerobic exercise:

Which means, any physical activity that uses large muscle groups and increases heart rate. Walking, jogging, biking, swimming, dancing, water aerobics are good options.

Muscular fitness:

Hand-held weights or homemade weights, such as plastic bottles filled with water may work. Try push-ups, abdominal crunches and leg squats.

Stretching exercises:

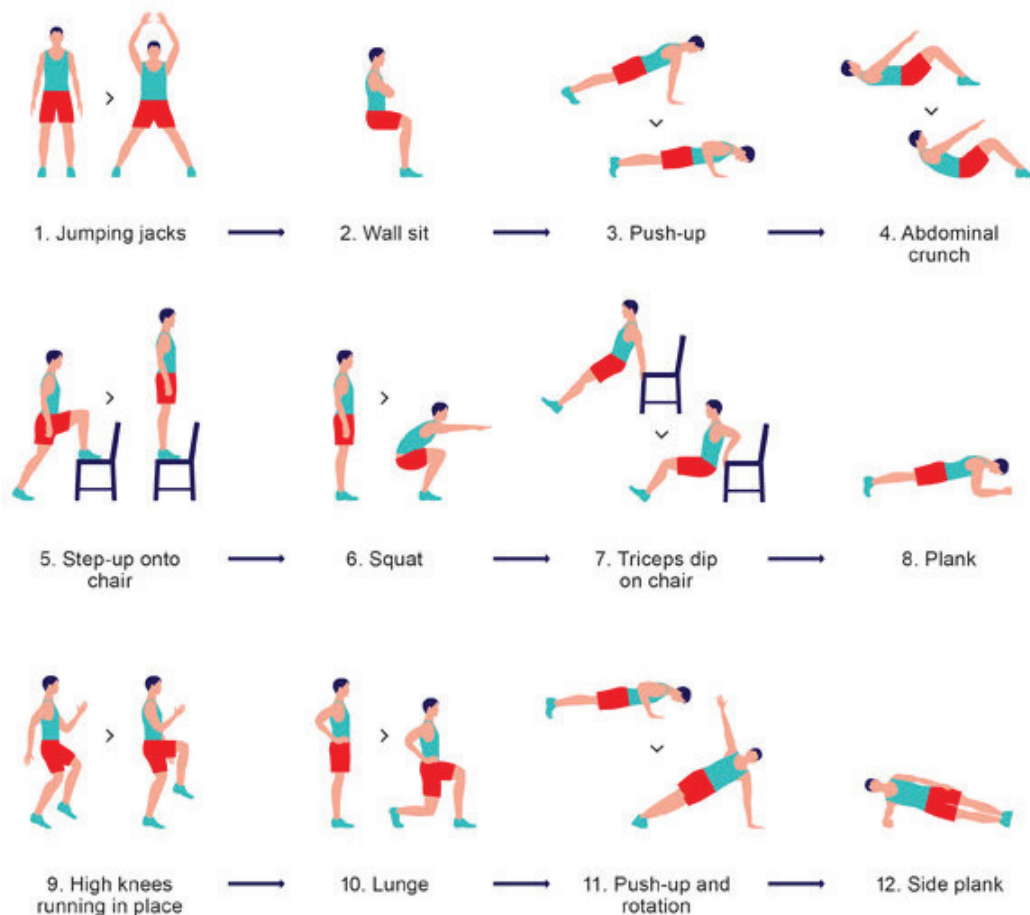
They are effective in increasing flexibility, improving the range of motion of joints and promoting a better posture. Activities such as yoga promote flexibility.

Core exercises:

The muscles in abdomen, lower back and pelvis are known as core muscles. They help to protect the back and connect upper and lower body movements. A core exercise is any exercise that uses the trunk of the body without support, such as abdominal crunches.

### 7. Start Now and Change Gradually

Gradual changes in lifestyle are much easier to make than major changes all at once.







# Cardiovascular Disease and Type II Diabetes

## Type II Diabetes

One of the most prominent risk factors for type II diabetes is obesity which can be prevented by controlling the intake of carbohydrates, especially refined sugars, right from child-birth until old age. The habit of adding sugar in tea or coffee is something which should be discouraged, most especially in overweight people who take these drinks regularly. Soft drinks should be avoided and replaced by fresh water. An active life with plenty of walking should be advised to everyone, except people whose illnesses prevent them from doing so. Yearly blood glucose checks are also advisable, especially to all those over 40 years of age.

**Dr. Etienne Grech (MD, MMCFD, MP)**

## Cardiovascular Disease

Coronary artery disease remains the number 1 world-wide killer; thereby the prevention, as well as treatment of all the risk factors related to it should be emphasized to the general public. Adequate emphasis should be given to doing regular physical health checks in order to detect various risk factors that are often symptomless, the quitting of smoking, as well as the reduction of stress by explaining the advantages of a better work - to - leisure ratio on a daily basis.

**Dr. Etienne Grech, MD, MMCFD, MP**

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# Cardiovascular Disease

## The Worldwide Burden

Mrs. Stewart, a 60 year old woman, just got back from the hospital. She had been having chest pain for 2 weeks now; the last episode she had was so unpleasant, she called her son in the morning. When the kind doctor asked how long she had been having the pain episodes, Mrs. Stewart realized that prior to the last 2 weeks, she felt pain in her chest when she had to use the stairs to her apartment on the 4th floor, that time there was nobody to carry her bag of groceries from the supermarket to the house, and a few other instances that had left her breathless and sweaty. She did not take the pain seriously though as it always left after she rested, and the episodes were really few considering she hardly ever left the house. The doctor then said she had unstable angina which had developed because she had atherosclerosis. The kind doctor also told her she had a BMI of 32 kg/m<sup>2</sup> which she said translated to obesity. See, the problem is Mrs. Stewart has always loved her Mac-and-cheese, fries and chicken, cheeseburgers, and cakes, ever since she was young, she could not understand how something so delicious could also turn out to be bad for one's health.

Cardiovascular disease (CVD), also known as heart disease, is a class of diseases that affect the heart and/or blood vessels (arteries, capillaries, and veins) (Maton, et al., 1993). It includes but is not limited to coronary artery disease, hypertensive heart disease, cardiomyopathy, and heart failure. Risk factors for CVD include age, gender, hypertension, smoking, excessive alcohol consumption, family history, high sugar consumption, obesity, physical inactivity, etc.

Why are we visiting this topic? Research has found that CVD accounts for the highest percentage of deaths worldwide; in Europe alone, it causes at least 4 million deaths. Smoking is still a major problem in some countries, even though the rate has declined, albeit at a very slow pace. Only a few adults engage in adequate daily physical activity and many adults and children are still overweight and obese. In Europe, CVD causes more deaths (about 46 times more) and a greater disease burden (about 11 times more) than malaria, tuberculosis, and AIDS together. In a year, CVD costs the EU economy approximately €200 billion.

In a study the Global Burden of Disease conducted, CVD was estimated to have caused 29.6% of all deaths worldwide in 2010; this is more than all maternal, neonatal, communicable, and nutritional disorders combined, and twice those caused by cancers (Nichols, et al, 2014). CVDs, cancers, diabetes, and chronic obstructive pulmonary disease all have lifestyle risk factors such as diet, smoking, and physical inactivity; together, they contribute to about 50% of global mortality (Salim, et al, 2004). These diseases account for a smaller proportion of the global burden of disease because they mostly affect people in middle and old age.



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CVD affects older adults usually, but the precursors of CVD, especially atherosclerosis, start early in life, so it is necessary to begin primary prevention efforts from childhood (Mc Gill, et al, 2008). It has been discovered that over 80% of premature heart disease and stroke is preventable. To do this, people must be educated about the threat CVD poses and taught the measures to prevent or reverse this disease. Such measures include: a low-fat, high-fiber diet including whole grains, fruit and vegetables, smoking cessation, limiting alcohol consumption, lowering blood pressures if elevated, weight loss if overweight or obese, increasing daily physical activity, reducing sugar consumption, decreasing psychosocial stress, quality sleep, and regular health screenings. If we focus on preventing the risk factors for CVD, screening high-risk individuals, and providing treatment that is effective and affordable to people who need it, we would significantly prevent disability and death, thereby improving our quality of life.

It has been predicted that mortality from coronary heart disease (CHD) in the United Kingdom alone could be halved by small changes in cardiovascular risk factors: a 1% decrease in cholesterol in the population could lead to a 2-4% CHD mortality reduction; a 1% reduction in smoking prevalence could lead to 2000 fewer CHD deaths per year; and a 1% reduction in population diastolic blood pressure could prevent around 1500 CHD deaths each year. 80% of the reduction in CHD mortality in Finland during the period of 1972-1992 has been explained by a decline in the major risk factors. Similarly, in Ireland, almost half (48.1%) of the reduction in CHD mortality rates during 1985-2000 among those aged 25-84 years has been attributed to favorable trends in population risk factors. In these countries, the cutback in smoking and decrease of blood pressure levels and cholesterol concentrations appears to have caused the greatest benefits.

### References

- Maton, Anthea; Jean Hopkins; Charles William McLaughlin; Susan Johnson; Maryanna Quon Warner; David LaHart; Jill D. Wright (1993). *Human Biology and Health*. Englewood Cliffs, New Jersey: Prentice Hall. ISBN 0-13-981176-1
- McGill HC, McMahan CA, Gidding SS (March 2008). "Preventing heart disease in the 21st century: implications of the Pathobiological Determinants of Atherosclerosis in Youth (PDAY) study". *Circulation* 117 (9): 1216-27. doi:10.1161/CIRCULATIONAHA.107.717033. PMID 18316498
- Melanie Nichols, Nick Townsend, Peter Scarborough, Mike Rayner. *Cardiovascular disease in Europe 2014: epidemiological update*. <http://eurheartj.oxfordjournals.org/content/early/2014/08/12/eurheartj.ehu299> reference 2
- Salim Yusuf, FRCP, DPhil; Srinath Reddy, MD; Stephanie Ôunpuu, PhD; Sonia Anand, FRCP(C), MSc. *Global Burden of Cardiovascular Diseases Part I: General Considerations, the Epidemiologic Transition, Risk Factors, and Impact of Urbanization*. <http://circ.ahajournals.org/content/104/22/2746.full>



# Hypertension

## The Silent Killer



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Hypertension (HTN) is defined as a repeatedly elevated blood pressure in the arteries exceeding 140/90 mmHg. The systolic reading correlates to the maximum pressure sustained when the heart contracts, whilst the diastolic reading reflects the minimum pressure when the heart relaxes in between successive beats. In Europe, HTN is particularly an issue as it has been shown to have an increased prevalence of 60% when compared to the United States and Canada (Wolf-Maier, et al., 2003). In addition, it has serious health implications for society as it is a major risk factor for cardiovascular events. In fact, it is a directly cause of approximately 25% of myocardial infarctions in Europe (Yusuf, et al., 2004).

In almost all contemporary societies, blood pressure rises with aging and the risk of becoming hypertensive in later life is considerable (Vasan, et al., 2002). HTN can either be classified as primary, whereby no specific underlying medical cause is found in around 90-95% of cases (Carretero & Oparil, 2000) or as secondary, the remaining 5-10% of the cases, where it is caused by other pre-existing conditions that affect the kidneys, arteries, heart or endocrine system. This condition is rarely accompanied by any symptoms, hence the reason behind the term 'silent killer'. Its identification is usually through seeking healthcare advice for an unrelated problem. Having said this, a certain proportion of people with HTN report headaches, lightheadedness, tinnitus, altered vision or fainting episodes as their chief presenting complaints.

Chronic HTN is a condition that puts a significant amount of strain on the heart, possibly leading to abnormal thickening of the myocardium and coronary artery disease (Lewington, et al., 2002). This condition is also a major risk factor for stroke, aortic aneurysm, peripheral arterial disease, abnormal blood vessel changes in the retina as well as chronic kidney disease. Moreover, HTN occurs in approximately 8 to 10% of pregnancies.

Such a sign may be the first to indicate pre-eclampsia which is a serious pre-natal condition that is responsible for approximately 16% of all maternal deaths globally (O'Brien, et al., 2008).

Dietary and lifestyle changes can improve blood pressure control and decrease the risk of health complications, although anti-hypertensive drug treatment, such as diuretics, calcium-channel blockers or ACE-inhibitors, is still often necessary in those individuals for whom such changes are not effective enough. Life style factors that influence blood pressure include aerobic physical activity (Dickinson, Mason & Nicolson, 2006), weight loss (Haslam & James, 2005), reduced dietary salt intake (He, Li & Macgregor, 2013), increased consumption of fruits, vegetables and low fat products as well as reduced alcohol and nicotine intake (Whelton, et al., 2002).

There is no substitute for the vital importance of the regular monitoring of blood pressure, as well as incorporating a healthy lifestyle as part of our daily routine to prevent formation of such a condition.

### References

Carretero, O.A., Oparil, S. (2000). Essential hypertension - Part 1: Definition and etiology. *Circulation*, 101(3), 329-335.

Dickinson, H.O., Mason, J.M., Nicolson, D.J. (2006). Lifestyle interventions to reduce raised blood pressure: A systematic review of randomized controlled trials. *J.Hypertens*, 24(2), 215-233.

Haslam, D.W., James, W.P. (2005). Obesity. *Lancet*, 366(9492), 1197-1209.

He, F.J., Li, J., MacGregor, G.A. (2009). A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. *Journal of Human Hypertension*, 23(6), 363-384.

Lewington, S., Clarke, R., Qizilbash, N., Peto, R., Collins, R. (2002). Age-specific relevance of usual blood pressure to vascular mortality: A meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*, 360(9349), 1903-1913.

O'Brien, E., Beevers, D.G., Gregory, Y. (2007). *ABC of hypertension*. London: BMJ Books, ISBN 1-4051-3061-X.


Vasan, R.S., Beiser, A., Seshadri, S., Larson, M.G., Kannel, W.B., D'Agostino, R.B., Levy, D. (2002). Residual lifetime risk for developing hypertension in middle-aged women and men: The Framingham Heart Study. *JAMA*, 287(8), 1003-1010.

Whelton, P.K., He, J., Appel, L.J., Cutler, J.A., Havas, S., Kotchen, T.A. (2002). Primary prevention of hypertension: Clinical and public health advisory from the National High Blood Pressure Education Programme. *JAMA*, 288(15), 1882-1888.


Wolf-Maier, K., Cooper, R., Banegas, J., Giampoli, S., Hense, H., Joffres, M. (2003). Hypertension prevalence and blood pressure levels in 6 European countries, Canada and the United States. *JAMA*, 289(18), 2363-2369.

Yusuf, S., Hawken, S., Ounpuu, S., Dans, T., Avezum, A., Lanas, F. (2004). Effects of potentially modifying risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet*, 364(9438), 937-952.

### Blood pressure readings explained ... in a heartbeat!



Blood Pressure Category	Systolic mm Hg (upper #)	and	Diastolic mm Hg (lower #)
Normal	less than 120	and	less than 80
Prehypertension	120 - 139	or	80 - 89
High Blood Pressure (Hypertension) Stage 1	140 - 159	or	90 - 99
High Blood Pressure (Hypertension) Stage 2	160 or higher	or	100 or higher
Hypertensive Crisis (Emergency care needed)	Higher than 180	or	Higher than 110



**SYSTOLIC** is the systolic phase the heart contracts, blood pressure rises and blood flows out along the vessels.

**DIASTOLIC** is the diastolic phase the heart relaxes, blood pressure falls and the blood fills the heart.

# Smoking and Other Risk Factors For Cardiovascular Disease

## A Quantification



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Smoking is a major risk factor for cardiovascular disease. Most cohort studies gave relative risks (RR) of ischemic heart disease (IHD) of the order of 2 to 3 for smokers versus nonsmokers. However, recent studies gave higher RR in heavy smokers, particularly among women. More important, cohort studies are likely to underestimate the real association, because some subjects who describe themselves as current smokers at data collection stop during follow-up. Smokers who stop are widespread in selected cohorts, such as British doctors.

Case-control studies give more relevant information on recent smoking, which is the key risk factor for acute myocardial infarction (AMI). The RR for current versus nonsmokers in most case-control studies is of the order of 4 to 5. The association is of similar magnitude for high and low tar cigarettes. Smoking interacts with obesity, hypertension, hyperlipidemia, diabetes and other recognised risk factors for IHD, producing massive excess risk. Passive smoking influences the risk of IHD too.

In terms of population attributable risk (PAR) percent, 38% of cases of AMI in the INTERHEART Study were due to tobacco (Teo et al., 2006). In Italy, 85% of all myocardial infarctions

could be explained through six risk factors (smoking, body mass, cholesterol, hypertension, diabetes and family history); 50% of all cases, and almost 80% below age 50 were attributable to tobacco only (Negri et al., 1995).

After stopping smoking, the RR of IHD falls in a short time, approaching that of never smokers within one or two years. Thus, stopping smoking is a key measure to reduce vascular mortality, particularly in middle age.

### References

Negri E, La Vecchia C, Franzosi MG, Tognoni G. Attributable risks for nonfatal myocardial infarction in Italy. GISSI-EFRIM investigators. Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto Miocardico. *Epidemiologia dei Fattori di Rischio dell'Infarto Miocardico*. *Prev Med*. 1995;24:603-9.

Teo KK, Ounpuu S, Hawken S, Pandey MR, Valentin V, Hunt D, Diaz R, Rashed W, Freeman R, Jiang L, Zhang X, Yusuf S; INTERHEART Study Investigators. Tobacco use and risk of myocardial infarction in 52 countries in the INTERHEART study: a case-control study. *Lancet*. 2006;368:647-58.



# Lipid Profiling

## Be Heart Healthy!

Cardiovascular disease (CVD) causes 47% of all deaths across the European Region according to the report published by the European Heart Network and the European Society of Cardiology in 2012 (European Society of Cardiology, 2012). The main cardiovascular diseases including stroke and heart disease, are triggered by physiological changes, such as high blood pressure (hypertension), obesity, high blood sugar (diabetes) and blood lipids (dyslipidaemia), which are caused by unhealthy behaviours. Moreover, hypercholesterolaemia is a major cardiovascular risk factor (WHO, 2011).

Screening as the systematic application of a blood test in order to identify a risk of CVDs has the potential to detect patients with high blood cholesterol levels (WHO, 2005). The lipid profile is a widely used panel of blood tests in clinical practise, which allows the identification of lipids abnormalities. For healthy adults with no cardiovascular risk factors, the ATP III guidelines recommend screening once every five years (National Heart & Lung Institute, 2002). A typical lipid profile includes total cholesterol (Tc), triglycerides (Tg), low-density lipoprotein (LDL) and high-density lipoprotein (HDL).

Most of earlier studies measured only serum Tc, although the majority of total cholesterol (60-70%) is contained in LDL. This type of cholesterol takes part in the development of a mature coronary plaque which leads to the unstable plaque. LDL is strongly implied as a powerful risk factor. LDL is the major atherogenic lipoprotein identified as the primary target of cholesterol-lowering therapy. LDL level <100 mg/dL is associated with very low risk of CHD whereas level above 100 mg/dL appears to be atherogenic. The higher the level of LDL, the greater the risk of coronary heart disease (CHD). Current recommendations for Tc and LDL cholesterol published in a report by the National Institutes of Health are presented in Table 1. Epidemiology research among human populations incriminate high levels of LDL as being atherogenic. It has been shown in patients with genetic hypercholesterolemia, whose advanced coronary atherosclerosis occurs commonly even in absence of other risk factors. Thus LDL has been considered as a powerful atherogenic lipoprotein. Recent evidence from laboratory investigations, epidemiology and clinical trials suggests that LDL lowering therapies stabilise plaques and reduces the likelihood of acute coronary syndromes. Nevertheless, further research in this area is essential (National Heart & Lung Institute, 2002).

Total Cholesterol (mg/dL)		LDL Cholesterol (mg/dL)	
		<100	optimal
<200	desirable	100-129	near optimal/ above optimal
200-239	borderline high	130-159	borderline high
≥240	high	160-189	high
		≥190	very high

**Table 1:** ATP III Classification of Total Cholesterol and LDL Cholesterol (National Heart & Lung Institute, 2002)

High level of serum triglycerides is associated with risk of CHD as well. Some triglyceride-rich lipoproteins promote atherosclerosis and predispose to CHD. The main weakness of this blood test is its lack of specificity. Several factors such as obesity, physical inactivity or smoking may elevate triglycerides. Low HDL cholesterol is consider as an independent risk factor and is strongly associated with a risk of CHD. Epidemiological data signify that a 1% decrease in HDL is associated with 2-3%



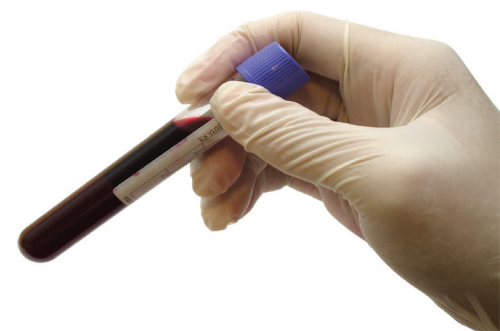
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increase in CHD risk. This relationship has not been scientifically proven, however one theory holds that HDL directly participates in the atherogenic process by promoting the efflux of cholesterol from foam cells in atherosclerotic lesions. Based on current recommendations, HDL of 60 mg/dL or higher is associated with a less than average risk of heart disease. The classification of HDL cholesterol is given in Table 2 below.

HDL cholesterol (mg/dL)	
<40	Low HDL Cholesterol
≥60	High HDL Cholesterol

**Table 2:** ATP III Classification of HDL Cholesterol<sup>4</sup>

All of the risk factors are shaped by economic growth, social determinants and corporate influences. It has been claimed that healthy public policies and health-care strategies are key for prevention and control of CVDs. Public screenings may raise awareness of risk factors for heart diseases and contribute to the lifestyle changes. However, due to limited resources and weak health systems most of targeted interventions are not accessible to patients who need them, especially for low-income and lower-middle-income countries (WHO, 2011). Majority of CVDs is preventable through the reduction of behavioural risk factors, such as unhealthy diet, tobacco use, physical inactivity and harmful use of alcohol. Most of deaths due to CVDs can be prevented by strategies, which already exist (Geneva WHO, 2008). What can you do? Start with an assessment of your risks performed by your healthcare provider.



## References

- European Heart Network and European Society of Cardiology. European Cardiovascular Disease Statistic 2012 Edition, (9/2012).
- Geneva World Health Organization. The global burden of disease: 2004 update, (2008).
- National Institutes of Health and National Heart, Lung and Blood Institute. Third Report of the National Cholesterol Education Program (NCEP), (2002).
- World Health Organization in collaboration with the World Heart Federation and the World Stroke Organization. Global Atlas on cardiovascular disease prevention and control, (2011).
- World Health Organization. Preventing Chronic Diseases: a vital investment: WHO global report, (2005).



# Myocardial Infarction versus Stroke



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Nowadays, myocardial infarction and stroke are leading causes of death worldwide. Both conditions share several similarities such as underlying causes, risk factors, diagnosis or treatment. Wherefore heart-healthy lifestyle changes not only reduce the risk of heart attacks, but also the chance of suffering from a stroke. But even though they are related in some aspects, their outcomes particularly differs enormously from each other.

First of all a myocardial infarction, commonly known as heart attack or acute myocardial infarction (AMI) - is a life-threatening event. Normally, if not treated immediately a portion of the myocardium due to insufficient blood supply and therefore insufficient supply of oxygen dies during an infarction. Typically these circulatory disorders, called ischemia, threaten the myocardium if overextending 20 minutes. These clots or blockages are due to a buildup of white blood cells, fat or cholesterol in narrowings of our coronary blood vessels.

Symptoms of a heart attack are normally sudden. They include long-lasting and severe chest pain, which may radiate to shoulders, arms, lower jaw and upper abdomen. This pain is often accompanied by sweating, nausea, vomiting and anxiety. However, in about 25% of all heart attacks there are few or no symptoms. Life-threatening arrhythmias frequently occur during the acute phase of a myocardial infarct. Even smaller infarctions are capable of leading to sudden cardiac death caused by atrial fibrillation.

Cardiovascular diseases, age, smoking, diabetes, high blood pressure or obesity increase the risk. The electrocardiogram is normally used to determine if one suffered from a myocardial infarction. The diagnosis via ECG is usually confirmed with a blood test using biomarkers like troponin.

Immediate treatment should prevent further blood clotting and includes administering aspirin. Furthermore normal coronary blood flow has to be restored via re-perfusion therapy. Typically this includes angioplasty, where the blood clot is mechanically removed, or thrombolysis, whereby the blockage will be removed by medication. In severe cases with multiply blockages of coronary arteries, bypass surgery is performed.

Second of all a stroke, also known as brain attack, results in loss of brain function. It occurs when blood supply to parts of the brain is interrupted or dramatically reduced, resulting in unsatisfying oxygen and nutrient supply towards brain tissue. Within minutes, brain cells begin to die - therefore prompt treatment is crucial. Early detection can reduce brain damage and potential complications to a minimum. Ischemia caused by blood clots resulting in arterial embolism or thrombosis of venous vessels are mainly causes for strokes.

Symptoms caused by stroke appear suddenly. Depending on severity they can also occur simultaneously. Such symptoms normally include disturbances of vision in one or both eyes with the possibility of unilateral pupil dilation, loss of visual field, or double vision. In addition, dizziness, nausea, vomiting, gait disturbance, balance or ataxia are also very common. Peo-

ple suffering from stroke frequently experience paralysis of the face, arm, leg or an entire half of their body followed by confusion, slurred speech, writing problems and dysphagia.

Treatment of strokes are normally an emergency and depend on whether having an ischemic stroke, blocking an artery or a hemorrhagic stroke, involving bleeding into the brain. First of all aspirin is administered to reduce the likelihood of having another stroke. Then physicians inject intravenously tissue plasminogen activator (TPA), if the time limit of 4.5 hours is not exceeded. Tissue plasminogen activator is injected during ischemic strokes to dissolve clots. Furthermore mechanical clot removal via angioplasty or carotid endarterectomy can help. During hemorrhagic stroke treatment focuses on controlling bleeding and reducing pressure in and on the brain. Surgery may be performed to help reduce future risk.

Although both diseases are very different in their outcome or symptoms, they share quite a few similarities. Both illnesses are result of interrupted vital blood flow due to atherosclerosis. Either of them will arise from a buildup of white blood cells or other substances in their blood vessels. This plaque of fatty substances or cells forms a blockage in the supplying artery. The indicated supplementary leak - either to brain or heart - can lead, if left untreated to severe damage or even death. But their lies also the difference. Strokes can not only appear as ischemic type, but also as hemorrhagic type. This means that a stroke can also result from a weakened vessel that ruptures and bleeds into surrounding brain areas. As blood accumulates further, pressure of the surrounding brain tissue increases. This can happen within the brain (intracerebral stroke) or within the subarachnoidal space.

The lack of blood during a stroke quickly leads to the death of brain cells in the affected area. Whereas during a heart attack the death of myocardial cells starts after approximately 20 minutes. Therefore if detected a stroke must be treated immediately. Therapies to treat stroke and heart attack are often similar. Where a blood clot appears and is thought to be the cause of a stroke or heart attack, a clot-dissolving medication is administered. This is called tissue plasminogen activator, or TPA. Whereas TPA is considered first-line therapy for ischemic stroke, it is not used to treat heart attack. During heart attack you first administer aspirin for platelet inhibition and mechanically open up the blocked heart artery during a procedure so called angioplasty. Even though treatment distinguishes from each other, the short-term goal for both stroke and heart attack is to restore normal blood flow to prevent further cell death.

Depending on which part of the brain is involved, a stroke can interfere with speech, memory and motor skills, but one may not feel much or severe pain during stroke. More common is post-stroke pain. In comparison, myocardial infarction normally involves long-lasting chest pain radiating to surrounding areas, however, some cases are also asymptomatic.

The risk factors for stroke and heart attack are quite similar. Main risks include smoking, diabetes, high cholesterol levels and high blood pressure. They promote atherosclerosis in blood vessels supplying blood to heart or brain. In particular smoking and diabetes, provoking inflammatory changes making blood vessels especially vulnerable to obstruction. During high blood pressure the heart is forced to pump faster and harder than it is used to pump, making it attackable. By the same manner acts chronic high blood pressure on brain blood vessels resulting in damage, making the brain accessible to a stroke.

# Rehabilitation and Lifestyle Changes Following Stroke



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Stroke is the leading cause of severe long-term disability, which affects 110,000 people a year in England (Lee, et al., 2011, Townsend, et al., 2012). Approximately two-thirds of patients survive a stroke with 1.1 million stroke survivors living in the UK (Adamson, et al., 2004). However, the detrimental impact of a stroke on patients, their families and society cannot be conveyed by statistical figures alone.

Although rehabilitation does not reverse the brain damage sustained from stroke, it can substantially improve patient recovery and help attain the best possible quality of life. The goal of the rehabilitation programme is to help patients regain functions, which will eventually help them to reclaim their independence. Disabilities following stroke include: reduced movement control; sensory alterations, including pain; problems understanding or using language; reduced cognition and memory as well as emotional disturbances. Complications vary with the severity of each individual's stroke, as well as with their ability to recover. Plasticity of the brain allows it to adapt to changes and aid stroke recovery; this is enhanced by continual practice of both the retained and lost skills (Thored, et al., 2006).

Rehabilitation usually starts in the hospital as soon as the patient is stable; the sooner it is started, the better the long-term outcome is inclined to be (Salter, et al., 2006). At early stages, the priorities are to prevent a recurrent stroke, manage the general health of the patient, encourage mobilisation and activities of daily living, as well as providing emotional support to both the patient and their families.

Stroke recovery can be continued after the patient is discharged from hospital. This can be carried out in both a home-based or outpatients basis. Only 30% of stroke survivors attend outpatient physiotherapy rehabilitation, which is much lower than the recommended number according to clinical guidelines (Roger, et al., 2012). At this stage, the focus of the rehabilitation turns to recovery of any residual physical impairments and cognitive deficits (Duncan, et al., 2005).



Throughout this recovery process, a strong multidisciplinary team is needed to achieve the best results for the patients. This can consist of doctors; nurses; physiotherapists; occupational therapists; speech and language therapists; psychologists, alongside the patient and their family members and caregivers (Duncan, et al., 2005).

There are many aspects of stroke rehabilitation. This is dependent on the part of the body affected and the patients' physical, mental and emotional status prior to and after the stroke. Physical therapy includes exercising to strengthen motor skills, improving mobility, maintaining range of motion and coordination, which includes swallowing. These can be reinforced by the use of functional electrical stimulation and virtual reality technologies. Communication therapy can help regain lost abilities in speaking, listening, writing and comprehension. Psychological evaluation and treatments may be needed, depending on the patients' cognitive skills and emotional adjustment. Many stroke patients exhibit symptoms of depression and medications can sometimes be given to improve symptoms.

Stroke recovery varies greatly between individuals. Generally the greatest recovery is in the acute and post-acute periods, within months after a stroke. However, sometimes performance can improve even after years, in the chronic stage. Recovering from a stroke can be a long and difficult journey and will often leave patients feeling frustrated and defeated. Dedication and a strong will are necessary to ensure the best long-term outcomes.

## References

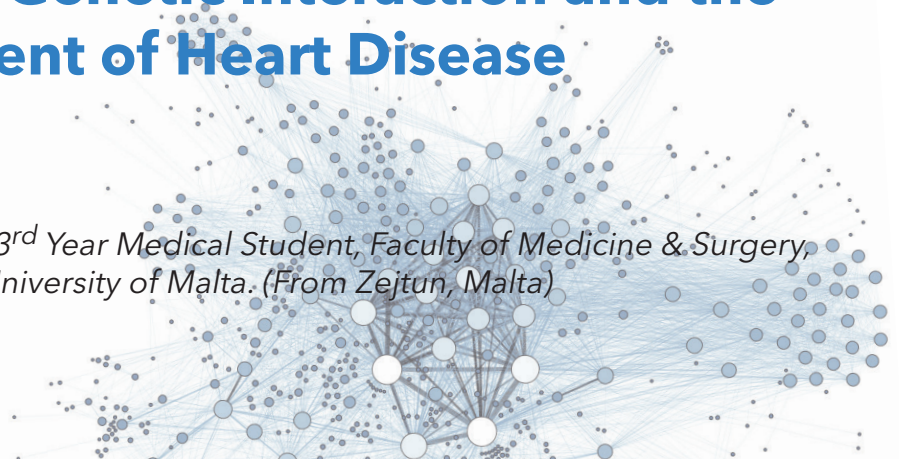
- Adamson, J., Beswick, A. and Ebrahim, S. 2004. Is stroke the most common cause of disability? *Stroke and Disability Journal of Stroke and Cerebrovascular Diseases*, 13(4), 171-177.
- Duncan, P.W., Zorowitz, R., Bates, B., Choi, J.Y., Glasberg, J.J., Graham, G.D., Katz, R.C., Lamberty, K., Reker, D., 2005. Management of Adult Stroke Rehabilitation Care - A Clinical Practice Guideline. *Stroke*, 36, 100-143.
- Lee, S., Shafe, A.C., Cowie, M.R. 2011. UK stroke incidence, mortality and cardiovascular risk management 1999-2008: time-trend analysis from the General Practice Research Database. *Cardiovascular Medicine*, 1, 1-9.
- Roger, V.L., Go, A.S., Lloyd-Jones, D.M., Benjamin, E.J., Berry, J.D., Borden, W.B., Bravata, D.M., Dai, S., Ford, E.S., Fox, C.S., Fullerton, H.J., Gillespie, C., Hailpern, S.M., Heit, J.A., Howard, V.J., Kissela, B.M., Kittner, S.J., Lackland, D.T., Lichtman, J.H., Lisabeth, L.D., Makuc, D.M., Marcus, G.M., Marelli, A., Matchar, D.B., Moy, C.S., Mozaffarian, D., Mussolino, M.E., Nichol, G., Paynter, N.P., Soliman, E.Z., Sorlie, P.D., Sotoodehnia, N., Turan, T.N., Virani, S.S., Wong, N.D., Woo, D., Turner, M.B. 2012. Heart disease and stroke statistics - 2012 update: a report from the American Heart Association. *Circulation*, 125(22), 2-220.
- Thored, P., Arvidsson, A., Cacci, E., Ahlenius, H., Kallur, T., Darsalia, V., Ekdahl, C.T., Kokaia, Z., Lindvall, O. 2006. Persistent Production of Neurons from Adult Brain Stem Cells During Recovery after Stroke. *Stem Cells*, 24(3), 739-747.
- Townsend, N., Wickramasinghe, K., Bhatnagar, P., Smolina, K., Nichols, M., Leal, J., Luengo-Fernandez, R., Rayner, M. 2012. Coronary heart disease statistics - 2012 edition. British Heart Foundation, 58, 1-211.
- Salter, K., Jutai, J., Hartley, M., Foley, N., Bhogal, S., Bayona, N., Teasell, R. 2006. Impact of early Vs delayed admission to rehabilitation on functional outcomes in patients with stroke, *Journal of Rehabilitation Medicine*, 38, 113-117.



# The Link Between Genetic Interaction and the Development of Heart Disease



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It is well evident nowadays that the number one cause of death in the world is heart disease, predominantly ischaemic heart disease (IHD), where there is narrowing of the lumen of the heart arteries reducing the blood flow to the heart muscle. This may lead to myocardial infarction. The development of heart disease depends on various risk factors and how they interact with components of our genetic makeup such as personality and sexuality.

Sex has been identified as an important determinant of developing heart disease. Traditionally the disease was always attributed to men but now we know that it is as deadly in women as it is in men, responsible for 40% of female deaths in the USA. Presentation and prognosis of heart disease also differ between genders. Women are more likely to present with atypical symptoms such as upset stomach, shortness of breath and lethargy rather than the classical left sided chest pain and therefore making diagnosis more challenging. In fact, women have a greater tendency than men to not know that they are suffering from heart attack due to these atypical symptoms. Heart attacks tend to be more severe in women and the prognosis is worse when compared to men, with around 50% dying within the first year of a heart attack (Texas Heart Institute, 2014) (Harvard Medical School, 2014).

Common risks factors that both sexes share include: obesity, smoking, diabetes, hypertension and family history. Men have a higher risk of developing heart disease than premenopausal women as estrogens seem to have a protective effect by lowering low density lipoproteins (LDL) and increasing high density lipoproteins (HDL) in blood (Harvard Medical School, 2014). However, the risk for men is the same when comparing men to post-menopausal women. Smoking and diabetes tend to increase the risk of heart disease in women more than in men.

Stress is also thought to increase the risk of developing coronary heart disease and our genetic makeup can predispose us differently to how we are affected by it. According to the type A and type B personality theory and studies by Friedman and Rosenman, someone with a type A personality who is impatient, ambitious, organised and workaholic tends to suffer more from stress and therefore have a higher risk of developing coronary heart disease when compared to the calmer and less stressful type B personality (McLeod. S, 2011). However, this theory was heavily criticised and later studies showed that the theory is not accurate and the only evident link found was between anger and angina only, but not directly with IHD (Williams. R.B, 2001). Nevertheless, it is clear that stress can lead to the disease indirectly by inducing unhealthy diets and smoking habits (Texas Heart Institute, 2014).

Family history of heart disease is a strong determinant of developing IHD especially if a first degree relative has been affected by the disease before the age of 55 in males and 65 in females (World Heart Federation, 2014). It is therefore important to always let the doctors know about this risk so as to help you avoid the disease as much as possible (American Heart Association, 2014). A number of studies have shown that there are inherited genetic components for the main risk factors of heart disease, including genetic components for abnormal lipid levels such as familial hypercholesterolemia, hypertension and diabetes type 2 (World Heart Federation, 2014).

Genetics play various important roles in the development of heart disease. More recent studies are focusing on this linkage to identify tailored diagnostic and therapeutic strategies, especially when it comes to sex differences and family history.





# Insulin Resistance and Type II Diabetes



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Type II Diabetes Mellitus, which constitutes 90% of diabetic cases, is a metabolic disorder characterised by a raised blood glucose level as a consequence of either reduced insulin production by cells, or by insulin resistance (the inability of cells to respond to insulin) (Kumar, et al., 2005). This is in contrast to Type I Diabetes, which is caused by damage to the pancreatic islet cells of Langerhans, resulting in an absolute lack of insulin (Shoback, 2011).

Insulin, a peptide hormone synthesized by cells of the pancreas, is responsible for the regulation of glucose and fat storage. Activation of insulin receptors activates a signalling cascade that ultimately leads to the insertion of more glucose transporters in the cell membranes, which is required for the storage of glucose.

Insulin resistance occurs when the pancreatic beta cells of Langerhans produce insulin, however other cells of the body are unable to respond to this insulin effectively and thus become resistant to its action. As a result, the pancreatic cells are stimulated to increase insulin production, causing hyperinsulinaemia; it is this that often leads to a diagnosis of Type II Diabetes (Chiu, et al, 2003). It has been hypothesised that insulin resistance contributes to an increased likelihood of developing Type II Diabetes and pre-diabetes (the state in which blood glucose is increased but not enough to be diagnosed as diabetes), by augmenting the workload of the pancreatic beta cells (NIH, 2013).

Insulin resistance syndrome (also known as metabolic syndrome) refers to a group of signs and symptoms linked to obesity. It is diagnosed when 3 or more of the following are present (NIH, 2013):

- Hyperglycemia (resting blood glucose levels >5.6mmol/L)
- Large waist size (35 inches or 40 inches or more in females and males respectively)
- Hypertension (high blood pressure; 130/85 or more)
- Altered blood cholesterol (HDL levels below 40mg/dL or 50mg/dL in men and women respectively)
- High blood triglycerides

Insulin resistance minimises the uptake of glucose, amino acids or fatty acids by adipose and muscle cells which consequently leak of the cell resulting in a decreased insulin/glucagon ratio. As a result, glycolysis, and therefore energy production, is inhibited. As glucose is not broken down, blood glucose levels rise outside normal levels, as shown in table 1, and cause clinical symptoms and signs (Stoppler, 2014).

Whilst there are many people who have raised blood glucose

levels, it is often not high enough to be classified as diabetes. Such patients are often diagnosed with 'pre-diabetes', and unless necessary precautions are taken (e.g. healthier diet, losing weight, increased exercise), this can develop into full-blown diabetes.

Common symptoms of diabetes type 2 occur as a result of hyperglycaemia, and include: (NHS, 2014)

- Polydypsia (increased thirst)
- Polyphagia (increased hunger)
- Polyuria (increased urinary frequency)
- Fatigue
- Blurred vision
- Unexplained weight loss

Various long-term complications arise as a result of hyperglycaemia, including:

- Cardiovascular disease
- Diabetic retinopathy (altered vision)
- Cerebrovascular disorders e.g. strokes
- Kidney failure

Whilst there is no cure for Type II Diabetes, it can be managed initially by lifestyle and dietary changes and the majority of individuals with Type II Diabetes require medication, such as metformin or insulin injections, to control their blood glucose levels.

Target Glucose level range	Pre-prandial (before eating)	Post-prandial (2 hours after eating)
Non-diabetic individuals	4.0 - 5.9 mmol/L	< 7.8 mmol/L
Type 2 diabetics	5.0 - 7.0 mmol/L	< 8.5 mmol/L

**Table 1:** Target blood glucose levels as recommended by NICE (Diabetes Digital Media Ltd, 2014)

## References

Chiu et al., 2007. Equivalent insulin resistance in latent autoimmune diabetes in adults (LADA) and type 2 diabetic patients. *Diabetes Res Clin Pract* Aug; 77(2):237-44

Diabetes Digital Media Ltd, 2014: Blood Sugar Level Ranges. Available online at < [http://www.diabetes.co.uk/diabetes\\_care/blood-sugar-level-ranges.html](http://www.diabetes.co.uk/diabetes_care/blood-sugar-level-ranges.html) > [Accessed 12 December 2014]

Kumar, V. et al., 2005. Robbins and Contran Pathologic Basis of Disease, 7th ed. Philadelphia, Pa: Saunders pp 1194-95

NHS Choices, Type 2 diabetes - Symptoms. Available online at < <http://www.nhs.uk/Conditions/Diabetes-type2/Pages/Symptoms.aspx> > [Accessed 14 December 2014]

NIH Publication No. 14-4893 June 2013 Insulin Resistance and Prediabetes Available online at <<http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/#relate>> [Accessed 12 December 2014]:

NIH Publication No. 14-4893 June 2013 Insulin Resistance and Prediabetes Available online at <<http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/#relate>> [Accessed 12 December 2014]:

Shoback, 2011. Greenspan's basic & clinical endocrinology, 9th ed. New York: McGraw-Hill Medical. pp. Chapter 17.

Stöppler, M.C., (2014). Insulin Resistance. Available online at <[http://www.medicinenet.com/insulin\\_resistance/article.htm](http://www.medicinenet.com/insulin_resistance/article.htm)> [Accessed 14 December 2014]

# Is There a Link Between Gestational Diabetes Mellitus and the Development of Type II Diabetes?

Gestational Diabetes Mellitus (GDM) refers to those cases of diabetes that have been diagnosed for the first time during pregnancy. It is thought to occur due to insulin receptors not functioning properly which can be caused by the presence of certain pregnancy-related hormones such as human placental lactogen.

Type II diabetes mellitus on the other hand can occur at any time throughout a person's lifetime but happens mostly in those over 40 years of age. It occurs due to the body being unable to produce enough insulin or due to the cells of the body being unresponsive to the insulin produced (insulin resistance).

Research suggests that there is a definite link between GDM and the development of insulin resistance and type II diabetes later in life. It has been suggested that although type II diabetes is likely to occur within the first 9 months post-partum (after the baby is born) it can happen at any time and so the rate of development increases to 20% by 9 years (Feig et al., 2008).

The reasons or mechanisms of why or how GDM increases the chances of developing type II diabetes are not very clear but it is thought that they are very similar to the causes of developing diabetes in general. For example, genetic pre-disposition plays an important role in the development of diabetes and it has been observed that the risk of African and Asian women developing GDM increases steeply within the first five years post-partum (Kim et al., 2002).

Also pregnancy increases weight which can lead to obesity (a risk factor for diabetes) increasing the chances of GDM occurring. However if obesity remains after the birth it can also be a risk factor for type II diabetes. In addition, as the medications to manage GDM are stopped after birth (they are no longer needed), sometimes the blood sugar levels may not return to normal, resulting in diagnosis of type II diabetes at the post-partum check.

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However, although the risk is there, it can be prevented. Therefore to prevent the development of type II diabetes after GDM in pregnancy it has been suggested to maintain a healthy weight by eating healthily and exercising regularly as the most important precautions. It is also important to either stop or never start smoking and to not have pregnancies within a short-time, to allow the body to recover and return to normal levels of metabolites. Lastly, it is important to have the blood glucose checked every year.

Although these are all personal recommendations, the health-care team also ensure GDM cases do not develop into type II diabetes. Therefore, it is very important to attend the six-week post-partum appointment to have the blood glucose checked and then every three years after that to monitor the levels.

## References

- Feig, D. S., Zinman, B., Wang, X. and Hux, J. E., (2008). Risk of development of diabetes mellitus after the diagnosis of Gestational Diabetes Mellitus. *CMAJ*. 179(3): 230-234
- Kim, C., Newton, K. M., Knott, R. H. (2002). Gestational Diabetes Mellitus and the incidence of type 2 diabetes. *Diabetes Care*. 25(10): 1862-1868
- Tidy, C. (2013). [www.patient.co.uk/health/pregnancy-and-diabetes](http://www.patient.co.uk/health/pregnancy-and-diabetes). [Accessed 30 January 2015]. Peer reviewed by: Dr Hayley Willacy





# The Complications of Diabetes

## With Special Reference to Type II

Diabetes is one of the commonest metabolic disorders of the developing world and although it can be managed well with drugs and lifestyle changes, uncontrolled diabetes can cause life-changing or even fatal complications.

The most common complications are; heart disease and stroke, neuropathy and foot problems, retinopathy, nephropathy and high blood pressure, sexual dysfunction, miscarriage and still birth as well as an increased risk of developing Alzheimer's disease especially in type II diabetes. Other complications include ketoacidosis, gastro-paresis and an increased susceptibility to certain skin conditions.

Most of the complications of diabetes are attributed to the formation of Advanced Glycation End products (AGE's) which although present in early embryonic development, increase drastically in the presence of glucose. One of their key roles is in forming covalent cross-links between protein molecules to alter their structure and function and affect the cellular matrix, basement membranes and vessel wall component leading to damage (Peppia et al., 2003). This explains the relation of diabetes and heart disease and stroke.

Neuropathy and foot problems also occur due to damage of the small blood vessels that supply the nerves. This can be dangerous as, minor injuries such as a nail in the toe can lead to infections or ulcers and even broken bones (Charcot joint) or amputations in severe cases.

Another complication is diabetic retinopathy which involves disorders of the retina due to damage of the small blood vessels supplying the retina. Sometimes this can lead to blindness.

Nephropathy refers to kidney disease which again is caused by damage to the small blood vessels and results in leaky / dysfunctional blood vessels making the kidneys less efficient. This can also cause high blood pressure as damaged kidneys are unable to maintain blood pressure.

Sexual dysfunction mainly refers to erectile dysfunction in men with diabetes, again due to blood vessel and nerve damage.

High blood sugar can lead to many complications in pregnancy due to the uncontrolled glucose levels which may cause birth defects, large baby, pre-term birth, pre-eclampsia, miscarriage or still-birth. Al-so, the drugs taken for management of diabetes such as insulin can cause hypoglycaemia in the baby after birth.

The increased risk of developing Alzheimer's can be explained by the fact that damage to blood vessels can cause vascular dementia due to reduced or blocked blood flow to the brain leading to hallmark changes in brain tissue and the reduced ability of the brain and other tissues to respond to insulin.

Diabetic ketoacidosis occurs when there is a severe lack of insulin, so the body breaks down other tissues as energy yielding ketones as a by-product which are toxic and cause the body to become acidic.

Gastro-paresis is again caused by damage to the vessels and nerves supplying the stomach and therefore slowing down or affecting the normal emptying of the stomach. Although symptoms can vary in severity they can lead to complications such as gastric-oesophageal reflux disease (GORD) which causes acid

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to come up from the stomach to the oesophagus.

Lastly, skin conditions can occur due to a low fluid volume compared to high glucose level within the body leading to dry skin which can crack, allowing microbial access into the body. This can lead to infections and even ulcers / amputations in severe cases.

Yearly Checks	Other Suggestions
Blood Glucose & Cholesterol	Get support if you are a smoker
Blood Pressure	Avoid excess intake of sugary food and drinks
Eye Screen and Feet Check	
Kidney Function Test	Take regular exercise
Weight Check and Waist Measurement (BMI)	Avoid excessive fatty food / junk food

### References

Diabetes UK (2015). [www.diabetes.org.uk](http://www.diabetes.org.uk). [Accessed 29 January 2015]

Peppia, M., Uribarri, J. and Vlassara, H., (2003). Glucose, Advanced Glycation End Products and Diabetic Complications: What is New and What Works. *Clinical Diabetes*. 21(4): 186-187





# Blood Glucose Monitoring Goes Needleless and Painless for Diabetic Patients

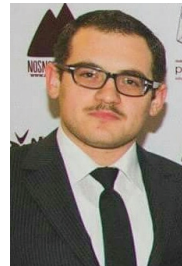
Often we hear friends and family admitting their fear of needles. For this reason, a good number of them do not dare take the seasonal influenza vaccine or donate blood. In stark contrast, the needle has become the lifelong friend of the diabetic patient. These patients need it in order to monitor their blood glucose level throughout the day. Patients who do not mind needles have no problem with this, however diabetic patients with a phobia of needles might be reluctant to monitor their blood glucose regularly, as this involves pricking their finger.

For several years, diabetics have been requesting the pharmaceutical industry to come up with a solution that delivers the same result but without the pain thus making the use of the needle redundant. The industry has come up with several ideas, such as the Lasette Laser Lancing Device and Alternative site testing. However these products have been found to cause problems elsewhere, therefore they have never made it to the market or were not made available for public use (Davidson & Moreland, 2013).

Pricking your finger several times a day is a painful, time consuming hardship that comes part and parcel with having diabetes and can cause calluses and sensitive fingers. It is made harder if the patient has visual or motor limitations. As a result, negative connotations about blood glucose monitoring may easily develop and may in turn lead to the avoidance of monitoring or limited monitoring (Davidson & Moreland, 2013).

In the near future, however, needle-free blood sugar testing may replace the finger prick through a technology called continuous glucose monitoring (CGM). This is possible with the use of a tiny sensor that is implanted beneath the skin. The sensor measures glucose levels in the fluid under the skin, which corresponds to blood sugar levels, though it is not as accurate as measuring glucose in the blood itself. This is followed by a transmitter which picks up the sensor readings and sends them to a monitor that sets off an alarm if blood glucose is too high or too low. The CGM system sensor stays in place for several days thus can eliminate the use of needles throughout the duration. Unfortunately, CGM Diabetes Technology is not widely available, despite being approved by the Food and Drugs Administration (FDA). In spite of this, it is thought that this technology will be available on the market and will be more accurate and easier to use in the near future.

An advantage of the implanted sensor is that it is water-resistant, so patients can bathe or shower with it in place. The information is sent by radio waves to a handheld monitor (Iliades, 2012). The major disadvantage of the implanted sensor is that it is considered invasive. A new system that replaces the im-



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planted sensor with a sensor that works through the skin surface, called Symphony tCGM, exists. However the FDA has not yet approved any non-invasive glucose monitoring device that uses infrared technology (Iliades, 2012; Manzella, 2014).

Researchers are also working on combining CGM systems with a computer that will respond to continuous glucose readings and trigger an insulin pump that will automatically dispense the correct amount of insulin. This technology is referred to as an artificial pancreas.

All of these are great ideas, however researchers insist that they "are still years away from replacing the finger prick and the glucose monitor", even though "diabetes research is moving forward all the time". In the meantime, sufferers of diabetes are told that as of yet, a finger prick and a glucose monitor are still the best way to keep their diabetes under control and prevent complications (Iliades, 2012).

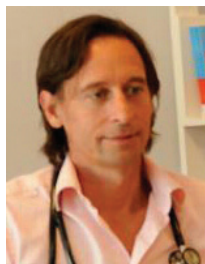
As of last June, diabetics also do not have to inject themselves with insulin, since the FDA also approved inhalable insulin. It is designed to rapidly disperse insulin throughout the bloodstream by using the inhaler typically used by asthma sufferers. It dispenses insulin in units so users can easily track their dosages, though the device needs to be replaced fortnightly and is more expensive than injectable insulin. Despite this it is the best option for diabetic patients who refuse to inject themselves (Tyler, 2015).

## References

- Iliades C. (November 12, 2012). Needle-Free Blood Sugar Testing. Retrieved February 2, 2015, from <http://www.everydayhealth.com/diabetes/needle-free-blood-sugar-testing.aspx>
- Klobassa Davidson, N.; Moreland, P. (May 24, 2013). Still pricking your finger for blood glucose monitoring? Retrieved February 2, 2015, from <http://www.mayoclinic.org/diseases-conditions/diabetes/expert-blog/blood-glucose-monitoring/bgp-20056564>
- Manzella N. (October 30, 2014). Non-Invasive Blood Glucose Meter Promises Painless Testing. Retrieved February 2, 2015, from <http://diabetes.about.com/b/2007/05/12/non-invasive-blood-glucose-meter-promises-painless-testing.htm>
- Tyler M. (February 3, 2015). Inhaled insulin has arrived. Retrieved February 7, 2015, from <http://www.battlediabetes.com/news/drugs-and-medication/inhaled-insulin-has-arrived>



# The Fifty Shades of Lifestyle



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From the Interheart studies (2004) we have learned that lifestyle factors such as lack of exercise, being overweight or obese, smoking, mental stress and unhealthy diet are responsible for 90% of all heart attacks. Almost similar figures have been found for type II diabetes (70-80% lifestyle related). More recently it has become evident that Alzheimer disease (60% lifestyle related) and cancer (40% lifestyle related) are also affected by unhealthy lifestyle habits. This makes healthy living one of the main targets to improve health and prevent disease. However, healthy living is becoming increasingly difficult for larger numbers of people; both maintaining a healthy lifestyle as well as healthy disease management

Since unhealthy lifestyle, as mentioned above, has such an impact on major diseases, the cost of unhealthy living for society is enormous. First, it results in a high burden of costs for health-care, not only primary and hospital care, but also for nursing homes. Moreover, it is known that employees with a chronic disease condition, such as hypertension or diabetes, have substantially more days of sick leave compared to employees who are healthy. In addition, people suffering from myocardial infarction hardly ever fully recover into full-time employability. Together, lifestyle related disease result in unsustainable direct and indirect costs. For example, in the UK alone, obesity results in an estimated 57 billion pounds in direct and indirect costs. Due to aging of the population and escalation of obesity and diabetes, these numbers are likely to increase. Therefore, unhealthy lifestyle factors become a serious threat to the economic vitality of the EU and its member states.

The major question now is, what should we do? A large part of lifestyle intervention is done by regular health care, such as general practitioners and medical specialists. The latest ACC/AHA guidelines have adopted lifestyle advice interventions in their recommendations. However, given the vast scale of lifestyle related disease and the limited time doctors and nurses can spend to provide lifestyle advice; it is unlikely that these

measures will create an important benefit. To give an example, in a small country such as the Netherlands which has 16 million inhabitants, the number of people with diabetes will soon exceed one million.

In the public health domain numerous attempts to turn the tide have failed and successful ones, such as the EPODE project in France, do not find enough implementation elsewhere. It is true that education and awareness about healthy living are slowly starting to have an effect on the sales of fast food and soda drinks. Both McDonalds and Coca-Cola saw 'sluggish' sales in 2014 and have to rethink their strategies, mainly due to the rise of the health conscious consumer.

Maybe it is about time to also rethink our own strategies to turn the tide of lifestyle related diseases. One important step is to stop thinking about patients and solutions stemming from regular health care and instead adopt marketing strategies to sell lifestyle solutions to health care consumers. One interesting example to look at is the immense success of 'The Fifty Shades of Grey'. The book written by the British author EL James has sold more than 100 million copies and the recently released movie based on 'The Fifty Shades of Grey' turns out to be a huge hit at the box offices. More than 100,000 tickets were sold in advance in the Netherlands alone, for special Ladies Nights. Imagine what a success it would be if we could reach similar numbers for a lifestyle intervention event. To achieve such a success, lifestyle education and programs would need to adopt factors such as sexiness, seduction, entertainment and passion rather than the serious medical approach which is mostly used now. We need to create captivating stories and narratives to attract the attention of the health care consumer. I still have to read the book to see what it is all about. But even before reading the book, it has provided me with an important lesson.





# Cancer and Neurodegenerative Disorders

## Cancer

The incidence of cancer has been on the rise throughout Europe and currently accounts to one in four of all causes of death. Hence, giving proper advice to the general public on the prevention of the commonest forms of cancer has become an important task for all medical professionals. Adequate emphasis should be given to quitting smoking, avoiding harmful pollutants, chemicals and excessive exposure to U.V light, taking the Human Papilloma Virus vaccine, engaging in protected sex as well as the introduction of a diet high in fibre. Screening also plays an imperative role in the early diagnosis of this disease - especially for breast, colorectal and cervical cancers.

**Dr. Etienne Grech (MD, MMCFD, MP)**

## Neurodegenerative Disease

The term "neuro-degenerative disease" is an umbrella term which includes various disorders with different etiologies, all of which result in the loss of the central nervous system neurons. Common among these disorders are Alzheimer's disease, Parkinson's disease, Creutzfeldt-Jakob disease (CJD), Motor neuron disease (MND), and Huntington's disease. Unfortunately, little is known about the causes of MND, or the origins of prion diseases such as CJD. Obviously, the hereditary disorder - Huntington's disease, requires adequate genetic counselling in its prevention. Secondary forms of Parkinson's related diseases can be prevented by avoiding repeated trauma to the head, (as in certain types of sports, such as wrestling or boxing), or exposure to chemicals or drugs which are classified as neurotoxic. Recent studies show a reduction in incidents of Alzheimer's disease by reducing known cardiovascular risk factors and by having a more mentally active lifestyle.

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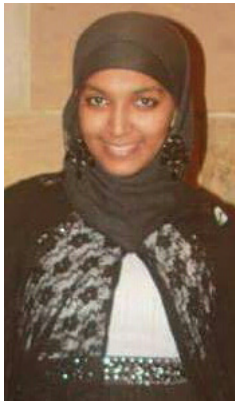
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# Fear of the Unknown

## The Commonest Types of Cancer in Europe



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Cancer is described in the Oxford dictionary as “a malignant growth or tumour resulting from an uncontrolled division of cells”. However, this definition does not include the devastating and emotionally draining impact it has on cancer sufferers and their families. All a cancer sufferer wants to know is whether they’ve been handed a death sentence or whether they’ll survive.

For example, you are changing clothes one day and you notice a lump in your body. You had not noticed this particular lump the day before. Panic, fear and denial set in. What could this lump be? One horrific realisation is that it could be the dreaded c-word, cancer. This is the reality of how the journey begins for many. Treatment either leads to remission or palliative care. This is where the fear of the unknown comes from.

The most common cancers in the European Union (EU), affecting both genders, are lung, breast, colorectal, stomach, liver and prostate cancer. These also cause the highest mortality rates. Pancreatic and kidney cancer are joint twelfth most common cancers in the world. Figures on cancer incidence, prevalence, and morbidity and mortality rates are varied. They can be found from multiple sources including the World Health Organisation, World Cancer Research Fund International and Cancer Research UK.

According to the International Agency for Research on Cancer, in 2012, the highest incidence of cancers in Europe were prostate, lung and colorectal in males whereas in females, the highest incidence were in breast, colorectal and lung cancer respectively. The cancers that caused the highest mortality and therefore were most feared were lung, colorectal and prostate cancer in males and breast, colorectal and lung cancer in females respectively.

In countries where certain cancers are high in incidence or mortality, screening programmes have been introduced where screening techniques and funding are both available. Those at most risk are recommended for screening depending on the type of cancer being screened for. Smoking is the highest risk factor for most cancers, followed by family history of cancer, gender, age and other environmental carcinogens.

The aim of a screening programme is to detect cancer early. Finding benign tumours reassures patients that it won’t spread whereas finding malignant tumours, especially in the early stages, gives a better prognosis. Treatment at an early stage is more successful. Breast cancer, cervical cancer, colorectal cancer, oral cancer and prostate cancer screening programmes are available in various countries around the world. Malta now has both a breast cancer and colorectal cancer screening programme.

Various treatment modalities are available, which may be used individually or in conjunction with others. These may be either curative or for control of cancer size depending on how much the cancer has spread in the body. Radiotherapy involves irradiating and killing the cancer cells directly. Chemotherapeutic drugs are given to the patient, usually intravenously, to target the cancer cells and prevent further growth. Surgery is usually done to either completely remove the cancer mass or remove enough so that consequent radiotherapy or chemotherapy can get rid of the rest.



# Is it Really All in the Genes?

## Oncogenes, Tumour Suppressor Genes and Cancer

Our body functions are usually kept under finely-tuned control by a variety of mechanisms. However sometimes these fail, leading to a number of consequences, some of which are quite devastating. One of these instances is cancer.

Cancers (also called malignant tumours) occur when a group of cells start dividing abnormally and uncontrollably and have the potential to invade and spread to other tissues. Benign tumours lack this second ability (NHS, 2014). This spreading can be via direct invasion of the surrounding structures, via blood and lymphatic fluid (NHS, 2014, NCI, 2014, WHO, 2014).

One reason why cancers occur is because of damage to the DNA (mutations) resulting in dysfunction of various genes including what are known as tumour suppressor genes (TSGs) as well as oncogenes. Tumour suppressor genes, as their name implies, inhibit the formation of tumours, either by cell growth inhibition or by inducing apoptosis (cell death) (Weinberg, 1991). Mutations usually decrease the activity of these TSGs hence this is known as a loss-of-function mutation. When abnormal cells with these defects are present in the body, there is less chance of them being eliminated. Examples of these genes include p53, APC (Adenomatous Polyposis Coli) and Rb (Retinoblastoma) (Vogelstein and Kinsler, 2004).

On the other hand, proto-oncogenes promote cell division. When mutated, they are called oncogenes, wherein they become highly activated or activated when they normally shouldn't be. Hence, this is known as a gain-of-function mutation (Vogelstein and Kinsler, 2004, Komarova, 2006). This leads to increased cell proliferation of mutated cells, thus possibly promote cancer formation. Examples of these cells are RAS and Bcr-Abl (Komarova, 2006).

The mutations may be spontaneous (acquired) or else inherited. We inherit two copies of each gene, one from each parent. In inherited cancer, the person inherits one mutated copy of a gene. This makes them likely to end up with two mutated copies of the gene since they only have one "good" copy. To have cancer, both copies need to be mutated. This is known as Knudson's two-hit hypothesis (Kuska, 1997). An example of such a gene is APC. It is the underlying cause of Familial Adenomatous Polyposis and patients having the mutation are more likely to get colorectal tumours (Fearson, 1997, ACS, 2014). Most cancers however, usually happen due to spontaneous mutations (ACS, 2014).

Sometimes, while the gene itself may not be mutated, its expression may be altered by other mechanisms. This can happen via methylation, histone modification and micro-RNA



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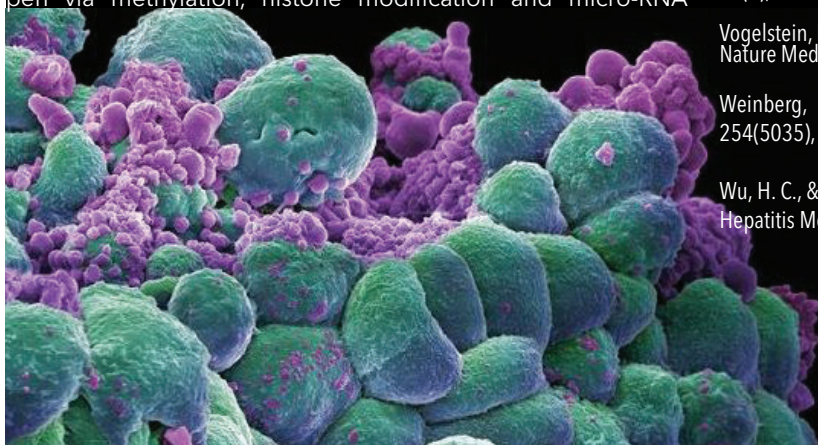
expression for example. This is called epigenetic modification. (Taby and Issa, 2010). However, while cancer due to inherited mutations cannot be prevented by the patient, there are several cancers which are partly brought on by other influences such as the environment and lifestyle. For example, aflatoxins, which are chemicals produced by some species of the fungus *Aspergillus*, are known to be a risk factor for hepatocellular carcinoma. They are found in warm and humid environments and could find their way in food such as peanuts and grains (Wu and Santella, 2012).

Other examples include exposure to asbestos, which predisposes people to mesothelioma as well as smoking, which predisposes to lung cancer (Suvatne and Browning, 2011, Hecht, 2006).

Thus, the bottom line is that the risk of getting cancer cannot be completely eliminated. However, there are means of avoiding adding on unnecessary risks. Apart from that, the importance of making healthy lifestyle choices in order to prevent cancer should not be ignored. At the end of the day even though genes have a significant role, they are not the only factor at play.

### References

- Fearson, E. R. (1997). Human cancer syndromes: clues to the origin and nature of cancer. *Science (New York, N.Y.)*, 278(5340), 1043-1050.
- Hecht, S. S. (2006). Smoking and lung cancer—a new role for an old toxicant? *Proceedings of the National Academy of Sciences of the United States of America*, 103(43), 15725-15726. doi:0607811103
- Komarova, N. L. (2007). Loss-and gain-of-function mutations in cancer: mass-action spatial and hierarchical models. *Journal of Statistical Physics*, 128(1-2), 413-446.
- Kuska, B. (1997). Alfred Knudson: two hits times 25 years. *Journal of the National Cancer Institute*, 89(7), 470-473.
- Suvatne, J., & Browning, R. F. (2011). Asbestos and lung cancer. *Disease-a-Month*, 57(1), 55-68.
- Taby, R., & Issa, J. J. (2010). Cancer epigenetics. *CA: A Cancer Journal for Clinicians*, 60(6), 376-392.
- Vogelstein, B., & Kinzler, K. W. (2004). Cancer genes and the pathways they control. *Nature Medicine*, 10(8), 789-799.
- Weinberg, R. A. (1991). Tumor suppressor genes. *Science (New York, N.Y.)*, 254(5035), 1138-1146.
- Wu, H. C., & Santella, R. (2012). The role of aflatoxins in hepatocellular carcinoma. *Hepatitis Monthly*, 12(10 HCC)





# The Mighty Carcinogens and Antioxidant Repair Mechanisms

Carcinogens are mutagens in diverse forms which cause cancer. Cancer can be caused by either DNA alterations or due to external factors. Carcinogens can be classified as genotoxic - which cause irreversible damage or mutations by binding to DNA like the NMU (N-nitroso-N-methyl urea) - and non-genotoxic which do not directly affect DNA but act in other ways to promote growth like hormones and some organic compounds. Carcinogens are classified into the following:

a) **Biological carcinogens:** They include infections caused by viruses like Epstein Barr virus, hepatitis B virus and human T-cell leukemia virus.

b) **Chemical carcinogens:** These consist basically of chemical substances found in the food we eat and other harmful chemical compounds like alcohol, tobacco which contains carbon monoxide, nitrogen oxide and ammonia as well as 4000 other harmful chemicals. Moreover, several research studies show that food additives or colourants made up of nitrates or non-nutritive sweeteners like saccharin, cyclamate and aspartame are related to the cause of bladder and colon cancer in both animals and humans.

c) **Physical carcinogens:** These form the major carcinogen examples. They include hard and soft materials like metals and metallic alloys, gel materials, asbestos, non-fibrous particulate materials like powdered metallic cobalt and nickel.

d) **Radiation:** This comprises of UV, sunlight, ionizing radiation, x-rays and radioactive materials, nuclear and thermal radiation. It is the major cause of neoplasia. Exposure to radon at increased levels can cause lung cancer, while cosmic and terrestrial radiation which includes UV rays from the sun that can damage our skin DNA and lead to skin cancer. X-rays use ionizing radiation which can lead to cell and DNA damage while other imaging tests such as MRI's, ultrasound and mammograms do not cause cancer because they operate with non-ionizing radiation.

Antioxidants are chemical substances that interact with and prevent free radicals from forming, thus preventing them from causing damage. These antioxidants could be endogenous and exogenous.

**EXOGENOUS ANTIOXIDANT:** These are also known as dietary antioxidants and are available as dietary supplements. These dietary antioxidants can be found in fruits, vegetables, meat,



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poultry, fish, spices and grains. Examples of these dietary antioxidants include: -beta carotene, lycopene, vitamins A, C and E (collectively known as alpha tocopherol), selenium.

**ENDOGENOUS ANTIOXIDANT:** These are made by our own bodies and not obtained from the food substances we eat and as a result they are far more potent than exogenous antioxidants. They help to repair all the free radical damage by initiating cell regeneration on inside and out. Exogenous antioxidants include glutathione (GSH), alpha lipoic acid, superoxide dismutase (SOD), catalase, coenzyme Q10 (CoQ10). Glutathione is the best antioxidant because it has 1 million extra unpaired electrons to share, thereby neutralizing these electrons. Various research shows that cancer cells release a lot of hydrogen peroxide which damage the nearby healthy tissues and their mitochondrial cells which means they can no longer produce energy using oxygen.

Other forms of carcinogens can be as a result of excess intake of antioxidants, hormones and some harmful chemicals. However the most important causes of cancer may be due to radioactive substances and minimal percentage goes to that in the food we eat and the viruses and bacteria. It is necessary to prevent cancer by dietary intake and inculcate good lifestyle habits such as not smoking and not drinking excess alcohol.

## References

General and clinical pathophysiology, edited by Professor Anatoliy V.Kubyskhin and Nikolay V.Krishtal professor M.D Ph.D.D.Sc Head of pathophysiology Department National Bogomolets Medical University, Kyiv.









# LING CER

I underwent three months of the most aggressive form of radiotherapy - Monday to Friday, for over twenty-five minutes. I was toast. Lucky for me, my cancer was sitting in my milk ducts - hence twelve lymph nodes were removed whilst eight were totally destroyed. I ate well but I lost plenty of weight.

I was put on Tamoxifen for five years and that is when all my problems started. I was advised it would be very risky to have a child so my dream of having one went out of the window ... if I did fall pregnant my health would be on the line, and of course I would not want my child to have cancer either.

**Q: What do you opt to do on a daily basis to stay healthy? Did you incorporate any lifestyle changes after your diagnosis?**

A: I try to eat well, by incorporating plenty of fruit and vegetables in my diet. I took my doctors' advice on reducing dairy products as well as taking iron supplements considering my iron levels are rock bottom. I try to walk everyday for over forty-five minutes (when I am not too tired). I also try to drink five litres of water daily to keep myself adequately hydrated.

**Q: What was your treatment like? Did you experience any side-effects?**

A: I had my breast tumour removed in October, 2009 - followed by radiotherapy in January, 2010. As a result of my treatment, my arm was very sore and painful. I could not find comfortable positions, as my arm would hurt if I stayed in the same position for over twenty minutes. I could not bathe my breast, arm or arm-pit for three months in a row. I was also very tired, so I tended to sleep a lot, to get all the rest I needed.

In November 2013 I was offered to do a hysterectomy as my uterine walls were thickening as a result of taking long-term Tamoxifen. My menstrual cycles were becoming ridiculous and highly painful too...I was menstruating every sixteen days, so I felt very weak with a low self-esteem. Clearly, this was the worst operation I have ever encountered. To date, I still feel numb and sore. My health is not as good as it used to be and even more so because I suffer from Graves' disease.

Presently, I cannot be put on Hormone Replacement Therapy until April 2015, when I am in remission. I am currently suffering from immense hot flushes; unfortunately nothing can be done for that. Some days I wake up very tired as my sleeping pattern is all over the place...but I am still here, alive and kicking. I consider every day as a sheer blessing!

**Q: Do you think there are enough cancer support groups locally?**

A: Yes, but there could be more I suppose. No counseling whatsoever is currently being given on weighing up different treatment options. Moreover, individuals who do not possess any social media accounts are probably not that aware of the cancer-charity walks local organizations hold - which I fully support when I am well enough to do them.

**Q: Do you think that the emotional needs of a cancer patient are catered for appropriately by physicians?**

A: Personally I think all physicians should be more empathetic towards their patients, and put themselves in their shoes, as it is only then, that they can provide full emotional support. It is important to start working on this character trait as from medical school, so the transition will be less difficult once they start practicing the medical profession.

**Q: In your opinion, what qualities shall a successful physician possess?**

A: A good physician shall be caring and understanding throughout, whilst having the ability to be open by addressing the patient with all honesty about his/her condition.

**Q: Do you believe there are enough cancer awareness campaigns on a European level?**

A: In my opinion, there are not enough TV adverts, bill-boards or awareness campaigns on cancer for the general public. It would be very good if flyers are sent to people's houses stressing on the importance of doing smear tests, mammograms and various other health screening tests.

**Q: Did the consultant mention that you can be considered cancer-free if there's no recurrence by the 5-year mark? What is your opinion about this issue?**

A: All I was told is that I am being put on Tamoxifen for 5 years, then, I will be in remission. I am awaiting my last two appointments now. I have started the countdown for these painful five years to be over ... I really am looking forward to fight this to the very end ... Roll on April, 2015!

As I have a strong family history of cancer, I took up the opportunity to get tested for the BRCA1 and BRCA2 genes, but I'm glad I do not carry them. I am due to undergo more genetic tests in the near future - prevention is better than cure - that is my motto!

**Q: What advice do you give to those patients that are currently battling cancer?**

A: As my dear sister once said in the magical booklet she wrote: "Never give up the fight!". I would definitely suggest them to soldier on and fight this battle! It is important to get support from your family and friends. Never keep it to yourself ... you will be needing lots of love and understanding in your hard journey ahead. Always adopt a positive mental attitude as it really does help you get through it! Find time to smile, even though it may be extremely difficult at times, but we can all count the little blessings in life - so never, ever give up!

**Q: What advice do you give to those individuals that are still cancer-free to date?**

A: Once you are diagnosed with cancer, your life changes and that is a fact! Even though one is cancer free, the fear will always remain of it ever occurring. Keep up with regular check-ups and appointments and get second opinions if you are in doubt about something. Rest well, exercise, know your body and surround yourself with positivity and people who love and truly care for you ... I don't know what I would have done if it was not for my family and my dear friends...I have learnt who my precious friends are for it is during the hard times in life that you get to know who is true to you.

# Sun Exposure

## Is it a Friend or a Foe?



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Summer is nearly here and with it comes two conflicting messages from popular media; “protect yourself, stay out of the sun” and “protect yourself, soak up the sun”.

So which is it? Is the Sun our friend or our foe?

Despite being associated with “healthy, glowing” skin, exposure to direct sunlight can cause the skin to prematurely age, cause painful sun burns, as well as promote various cancers, particularly skin cancers. This is because Ultraviolet (UV) radiation which is present in sunlight can penetrate deeply into the skin, where it can cause direct DNA damage or promote the generation of DNA-damaging molecules as well as damaging collagen and elastic fibres and also damaging vitamin A (Mead, 2008).

The most harmful effect of sun exposure is skin cancer. There are three types of skin cancer: basal cell carcinoma, squamous cell carcinoma and melanoma; and UV radiation from sun exposure is the leading cause in all of them (Kimlin and Guo, 2012). Skin cancer is the most prevalent form of cancer worldwide but survival rates are very high and it is also one of the few preventable forms of cancer.

The most widely accepted prevention method for skin cancer is protecting the skin from harmful UV rays through the application of sunscreen and limiting exposure to direct sunlight particularly between the hours of 11 am and 3pm when UV radiation is at its highest level (WHO, 2015).

Susceptibility to skin cancer and sunburns is variable amongst different ethnic groups. Individuals with fairer skin, hair and eyes are much more susceptible to skin cancer than those with darker skin, hair and eyes (Zanetti et al., 2006). This is because those with fairer skin have lower levels of melanin which helps block harmful UV rays. Similarly, children are more susceptible to sunburn, which itself can lead to skin cancer, and therefore both these groups should take extra protective measures to reduce their exposure to direct sunlight. Another group which should take extra measures are those who work outdoors primarily, as both intermittent and chronic exposure to sun can cause skin cancer.

Providing, these safety measures are implemented, sun exposure has a long and varied list of benefits. The most important is the production of Vitamin D.

The body can naturally produce its own vitamin D by the skin being exposed to the sun for 30 minutes per week hence it being commonly known as the “sunshine vitamin” (Sahay and Sahay, 2013). Having said this, studies have suggested that up to 50% of adults and children worldwide are vitamin D deficient hence consuming it as a food supplement is highly recommended (Nair and Maseeh, 2012).

Benefits of vitamin D in the body	How it works	Consequences of a Deficiency
Healthy bones and teeth	Vitamin D is actually considered as a pro-hormone as it regulates and maintains blood calcium and phosphorus levels	Rickets (in children) caused by reduced mineralisation and softening of the bones  Osteomalacia and osteoporosis in adults
Reduced risk of infectious diseases	Children given 1,200 IU/day of vitamin D, for 4 months during the winter reduced their risk of influenza A infection by over 50%	Weaker immune system
Reduced risk of autoimmune diseases	Boosts the immune system	Increased chance of developing various autoimmune conditions such multiple sclerosis and rheumatoid arthritis
Reduced risk of diabetes	In a study, infants who received 2,000 IU/day had an 88% lower risk of developing type 1 diabetes by the age of 32	In type 2 diabetics, a deficiency of vitamin D may have an adverse effect on glucose tolerance and thus insulin secretion
Reduced risk of cardiovascular disease	A study conducted in healthy children who were given 2,000 IU/day had significantly lower arterial wall stiffness after 16 weeks compared with children who were given only 400 IU/day.	Increased risk of developed hypertension, atherosclerosis, heart attack and stroke
DNA repair and metabolic processes	Healthy volunteers taking 2,000 IU/day for a few months up-regulated 291 different genes that control up to 80 different metabolic processes. This led to an improvement of DNA repair and reduced the effect of autoxidation	UV radiation from the sun can cause oxidation of various metabolites which has implications for aging and skin cancer
Preventing cancer	Regulates mitosis and cell-to-cell communication. Some studies have found that calcitriol (the active hormone of vitamin D) can reduce the development of cancer by slowing the growth of new blood vessels in cancerous tissue. This increases cancer cell death by reducing cell proliferation and metastasis	Increased chances of developing various types of cancers

**Table 1:** The benefits of vitamin D, the physiology of how it works and what occurs in the body if there is a deficiency. (Nair and Maseeh, 2012) (Rees et al., 2013) (Gröber et al., 2013) (Martineau and Jolliffe, 2014) (Moukayed and Grant, 2013)

There are many benefits associated with vitamin D in pregnant women as some studies show that pregnant women who are deficient in vitamin D seem to be at a higher risk of developing preeclampsia, gestational diabetes mellitus and bacterial vaginosis (Kaushal and Magon, 2013).

So have you decided if the sun is our friend or foe? It is predominantly our friend however, having said this, in very high or low doses it could also become our foe. Therefore, it is important that at all stages of life we should attain the recommended daily allowance of vitamin D to ensure a healthy life full of vitality.

### References

- Gröber, U., Spitz, J., Reichrath, J., Kisters, K., & Holick, M. F. (2013). Vitamin D: update 2013: from rickets prophylaxis to general preventive healthcare. *Dermato-endocrinology*, 5(3), 331-347.
- Individual protection against UV. (2015). Retrieved March 6, 2015, from <http://www.who.int/uv/faq/protect/en/index1.html>
- Kaushal, M., & Magon, N. (2013). Vitamin D in pregnancy: A metabolic outlook. *Indian journal of endocrinology and metabolism*, 17(1), 76.
- Kimlin, M., & Guo, Y. (2012). Assessing the impacts of lifetime sun exposure on skin damage and skin aging using a non-invasive method. *Science of The Total Environment*, 35-41.
- Martineau, A., & Jolliffe, D. (2014). "Vitamin D and Human Health: from the Gamete to the Grave": Report on a meeting held at Queen Mary University of London, 23rd-25th April 2014. *Nutri-ents*, 6(7), 2759-2919.
- Mead, M. (2008). Benefits of Sunlight: A Bright Spot for Human Health. *Environmental Health Perspectives*, A160-A167
- Moukayed, M., & Grant, W. B. (2013). Molecular link between vitamin D and cancer prevention. *Nutrients*, 5(10), 3993-4021.
- Nair, R., & Maseeh, A. (2012). Vitamin D: The “sunshine” vitamin. *Journal of pharmacology & pharmacotherapeutics*, 3(2), 118.
- Rees, J. R., Hendricks, K., Barry, E. L., Peacock, J. L., Mott, L. A., Sandler, R. S., ... & Baron, J. A. (2013). Vitamin D3 supplementation and upper respiratory tract infections in a randomized, controlled trial. *Clinical infectious diseases*, cit549.
- Sahay, M., & Sahay, R. (2012). Rickets-vitamin D deficiency and dependency. *Indian journal of endocrinology and metabolism*, 16(2), 164.
- Zanetti, R., Rosso, S., Nieto, A., Miranda, A., & Mercier, M., et al (2006). Comparison of risk patterns in carcinoma and melanoma of the skin in men: A multi-centre case-case-control study. *British Journal of Cancer*, 94 (5), 743-751.



# Olive Oil and the Risk of Cancer

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Olive oil is the major common characteristic of diet in various parts of the Mediterranean, and appears to be a favorable indicator of the risk of various common cancers, although the evidence is still open to evaluation.

We considered the association of olive oil with breast, ovarian, endometrial, stomach, colorectal, pancreatic and upper digestive and respiratory tract cancers from a network of case-control studies from Italy. The subjects' usual diet was investigated through a validated FFQ, including specific questions aimed at assessing added fat intake patterns. We also conducted a systematic review and meta-analysis of olive oil and cancer risk (Pelucchi et al., 2011).

With reference to breast cancer, after allowance for demographic and reproductive risk factors, energy intake, and other types of fats, the continuous odds ratio (OR) for a unit increase intake of olive oil was 0.89 (95% confidence interval, CI, 0.81-0.99). This is consistent with results from animal data, ecologic studies and other epidemiological studies conducted in Greece and Spain, which indicates that there is an inverse relation of breast cancer risk with intake of olive oil.

With reference to ovarian cancer, after multivariate analysis, a reduced risk was observed for high intake of olive oil (OR=0.68 for the highest quintile of intake compared to the lowest one). No significant associations were observed for mixed seed oils, butter and margarine. A similar inverse relationship was observed for endometrial cancer.

For colorectal cancer, the ORs for subsequent tertiles of olive oil intake, compared with the lowest one, were 0.87 and 0.83 when colorectal carcinoma was analyzed as a whole, 0.82 and 0.81 for colon cancer, and 0.96 and 0.88 for rectal cancer. Furthermore, our results did not indicate a relevant role of fried foods on colorectal cancer risk in Italy, and suggested a possible favorable effect of (fried) olive oil on colon cancer risk. Likewise, the RRs for the highest consumption quintile of olive oil were 0.6 for both stomach and pancreatic cancer.

The most consistent evidence of a favorable role of olive oil came for upper digestive and respiratory tract cancers. With reference to oral and pharyngeal cancer, high intake of olive oil was associated with significantly lowered risk (OR=0.4 for the highest versus the lowest quintile of intake). The beneficial effect of olive oil was attenuated by the introduction of vegetable consumption in the model. Mixed seed oils and margarine were not related to risk, whereas a strong positive association emerged for butter (OR=2.3).

Likewise, in a case-control study of esophageal cancer, olive oil intake showed a significant reduction of risk (OR=0.3), while butter was directly associated with esophageal cancer risk (OR=2.2). No significant associations emerged with consump-

tion of specific seed oils, mixed seed oils or margarine. The introduction into the model of total vegetable consumption reduced the association with olive oil, which remained, however, statistically significant.

In an analysis of the role of various seasoning fats in relation to laryngeal cancer risk, a significant reduction of cancer risk was observed for olive oil (OR=0.4) and specific seed oils (OR=0.6), while mixed seed oils were directly associated with laryngeal cancer risk (OR=2.2).

In conclusion, large multicentre Italian studies showed that olive oil is a favorable indicator of breast, ovarian, endometrial, stomach, colorectal, pancreatic, and mostly of upper digestive and respiratory tract cancers. For the latter neoplasms, the relative risk difference between extreme levels of olive oil versus butter consumption reached a factor 4 to 5. Thus, preferring olive oil to other added lipids, particularly those rich in saturated fats, can decrease the risk of upper digestive and respiratory tract neoplasms, breast and, possibly, colorectal and other (digestive) cancer sites.

## References

Pelucchi C, Bosetti C, Negri E, Lipworth L, La Vecchia C. Olive oil and cancer risk: an update of epidemiological findings through 2010. *Curr Pharm Des.* 2011;17(8):805-12. Review.



# The Importance of Cancer Screening



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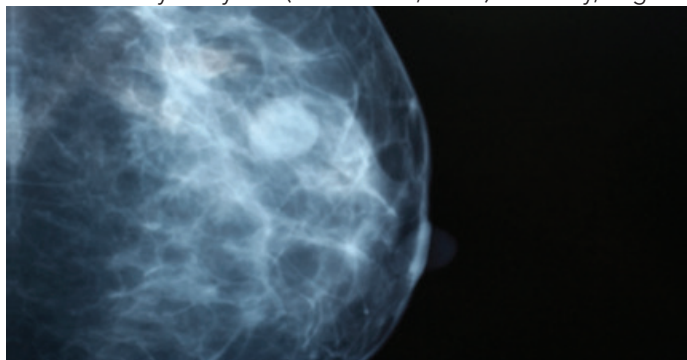
A word that strikes fear into the hearts of many is cancer. But, how can such a word exert such a potent effect?

People may associate cancer with death; even though they are aware of the fact that cancer may be treated and managed (Robb et al., 2014). The public's varied attitudes, beliefs, knowledge, experiences and perceptions form their ideas of what cancer is and what it really means to them. This, in turn, may influence the way they view cancer screening.

Cancer screening is the use of tests which try to detect cancer in people before symptoms surface (National Cancer Institute, 2014). Early detection may lead to better management and may decrease the cancer mortality rate. There are various cancer screening programmes which consider; the target population, the cost, the economic burden of disease and the efficacy of the screening programme, amongst other factors. Cancer screening may include; physical examinations, laboratory tests, genetic tests, and/or radiological tests.

Identifying cancer screening barriers and facilitators may provide an understanding of what motivates or discourages participation. Hesitation to participate in breast cancer screening (secondary prevention) mammography may be due to the fear of pain (Padoan et al., 2014). Moreover, Hvidberg et al., (2014) found a link between negative cancer beliefs and a low level of household income as well as a low level of education. However, Rosser, Njoroge & Huchko (2014) argued that cervical cancer screening may be encouraged in low income situations through educational interventions so that more knowledge may be acquired. Similarly, evidence indicated that giving the correct information and knowledge may encourage participation in breast cancer screening (Tsunematsu et al., 2013).

The benefits and risks associated with cancer screening always need to be considered. A reduced chance of breast cancer mortality was linked to screening mammography (Pocobelli & Weiss, 2014). However, Coldman & Phillips (2013) emphasized that there was more of a chance of being over-diagnosed through the use of mammography in women who were older (aged over 60). Colorectal cancer mortality rates were found to be decreased with the use of faecal occult blood tests carried out once every two years (Favre et al., 2004). Similarly, Segnan



et al., (2011) found a significant decrease in both colorectal cancer mortality as well as incidence in participants (55-64 years) via the use of a single flexible sigmoidoscopy. However, Doria-Rose, Newcomb & Levin (2005) concluded that a different test should be used (if proper sigmoidoscope insertion isn't possible) in women and people who are of an older age. This being so as it was found that there was more of a chance of colorectal cancer in inadequate sigmoidoscopy, since the procedure would not have been carried out correctly. Roobol et al., (2013) concluded that individuals between the ages of 55-69 were found to have a decreased prostate cancer mortality rate due to systematic prostate specific antigen (PSA) screening. However, Hugosson et al., (2010) claimed that there was a significant chance of over-diagnosing, even though prostate cancer mortality was substantially decreased.

In conclusion, cancer screening may lead to early detection of disease, and therefore an earlier diagnosis enabling the proper treatment and management to be administered; which is why it is so important. Cancer screening may help save lives by allowing people to get the necessary treatment at a point in time where the cancer can be managed or treated in a better way than it would have, had it been diagnosed at a later stage. This is important because at the end of the day, one must be vigilant and properly informed to actively participate in making one's health a priority.

## References

- Coldman, A. & Phillips, N. (2013). Incidence of breast cancer and estimates of overdiagnosis after the initiation of a population-based mammography screening program. *CMAJ*, 185(10). doi: 10.1503/cmaj.121791.
- Doria-Rose, V. P., Newcomb, P. A. & Levin, T.R. (2005). Incomplete screening flexible sigmoidoscopy associated with female sex, age, and increased risk of colorectal cancer. *Gut*, 54(9), 1273-8.
- Favre, J., Dancourt, V., Lejeune, C., Tazi, M. A., Lamour, J., Gerard, D., Dassonville, F. & Bonithon-Kopp, C. (2004). Reduction in colorectal cancer mortality by fecal occult blood screening in a French controlled study. *Gastroenterology*, 126(7), 1674-80.
- Hugosson, J., Carlsson, S., Aus, G., Bergdahl, S., Khatami, A., Lodding, P., Pihl, C. G., Stranne, J., Holmberg, E. & Lilja, H. (2010). Mortality results from the Göteborg randomised population-based prostate-cancer screening trial. *The Lancet Oncology*, 11(8), 725-732.
- Hvidberg, L., Wulff, C. N., Pedersen, A. F. & Vedsted, P. (2014). Barriers to healthcare seeking, beliefs about cancer and the role of socio-economic position. A Danish population-based study. *Prev Med*. doi: 10.1016/j.ypmed.2014.12.007.
- National Cancer Institute - Cancer Screening Overview (PDQ®). (2014). Retrieved December 23, 2014, from <http://www.cancer.gov/cancertopics/pdq/screening/overview/patient/page1>.
- Padoan, M., Ferrante, D., Pretti, G. & Magnani, C. (2014). Study of socio-economic characteristics, diagnosis and outcome of women participating or not participating in mammogram screening. *Ann Ig*, 26(6), 518-26. doi: 10.7416/ai.2014.2010.
- Pocobelli, G. & Weiss, N. S. (2014). Breast cancer mortality in relation to receipt of screening mammography: a case-control study in Saskatchewan, Canada. *Cancer Causes & Control*. doi: 10.1007/s10552-014-0503-2.
- Robb, K. A., Simon, A. E., Miles, A. & Wardle, J. (2014). Public perceptions of cancer: a qualitative study of the balance of positive and negative beliefs. *BMJ Open*, 4(7). doi: 10.1136/bmjopen-2014-005434.
- Roobol, M. J., Kranse, R., Bangma, C.H., Van Leenders, A. G., Blijenberg, B. G., Van Schaik, R. J., Kirkels, W. J., Otto, S. J., Van Der Kwast, T. H., De Koning, H. J., Schröder, F. J. & ERSRC Rotterdam Study Group. (2013). Screening for prostate cancer: results of the Rotterdam section of the European randomized study of screening for prostate cancer. *Eur Urol*, 64(4), 530-9. doi: 10.1016/j.eururo.2013.05.030.
- Rosser, J., Njoroge, B. & Huchko, M. J. (2014). Knowledge about cervical cancer screening and perception of risk among women attending outpatient clinics in rural Kenya. *Int J Gynaecol Obstet*. doi: 10.1016/j.ijgo.2014.09.006.
- Segnan, N., Armaroli, P., Bonelli, L., Risio, M., Sciallero, S., Zappa, M., Andreoni, B., Arrigoni, A., Bisanti, L., Casella, C., Crosta, C., Falcini, F., Ferrero, F., Giacomini, A., Giuliani, O., Santarelli, A., Visioli, C. B., Zanetti, R., Atkin, W. S., Senore, C. & SCORE Working Group. (2011). Once-only sigmoidoscopy in colorectal cancer screening: follow-up findings of the Italian Randomized Controlled Trial—SCORE. *J Natl Cancer Inst*, 103(17), 1310-22. doi: 10.1093/jnci/djr284.
- Tsunematsu, M., Kawasaki, H., Masuoka, Y. & Kakehashi, M. (2013). Factors affecting breast cancer screening behavior in Japan – assessment using the health belief model and conjoint analysis. *Asian Pac J Cancer Prev*, 14(10), 6041-8.

# Intellectual activity

## A Key Factor in Combating Alzheimer's Disease

Can the progression of Alzheimer's disease be delayed with increased mental usage?

Alzheimer's disease is the most common type of dementia. Dementia results from progressive brain damage and presents with worsening symptoms of mental ability. There is no cure for Alzheimer's disease but medication can slow down progression and treat symptoms in some patients.

There has always been a generally accepted view that "mental exercise" helps with thinking and memory. As such, patients and their caregivers are generally advised to maintain this as much as possible in order to ward off the effect of dementia. Various aspects of mental stimulation, whether given directly or indirectly by those caring for patients, has been part of holistically caring for patients with dementia.

Studies have been conducted to see the beneficial effects of continuous intellectual activities on "strengthening" our minds, whether to improve memory or prolong memory loss in future. There are several studies so far that show evidence that it is beneficial to keep an active brain to ward off memory loss as much as possible.

Since dementia is primarily a condition of impaired memory and thinking, over the years, many studies have been specifically looking into the effect that cognitive activities as part of disease management has on caring and disease progression itself.

A recent systematic review and meta-analysis has analysed the effect of one form of mental exercise, called cognitive stimulation, on cognitive functioning of patients with dementia. This review collected data from 15 randomised controlled trials from several different countries. There were 718 participants in total in this trial who had undergone a variety of intensity of cognitive stimulation in different settings. Activities of cognitive

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stimulation were aimed to target thinking and memory skills, with a range of different activities including puzzles, games and practical activities.

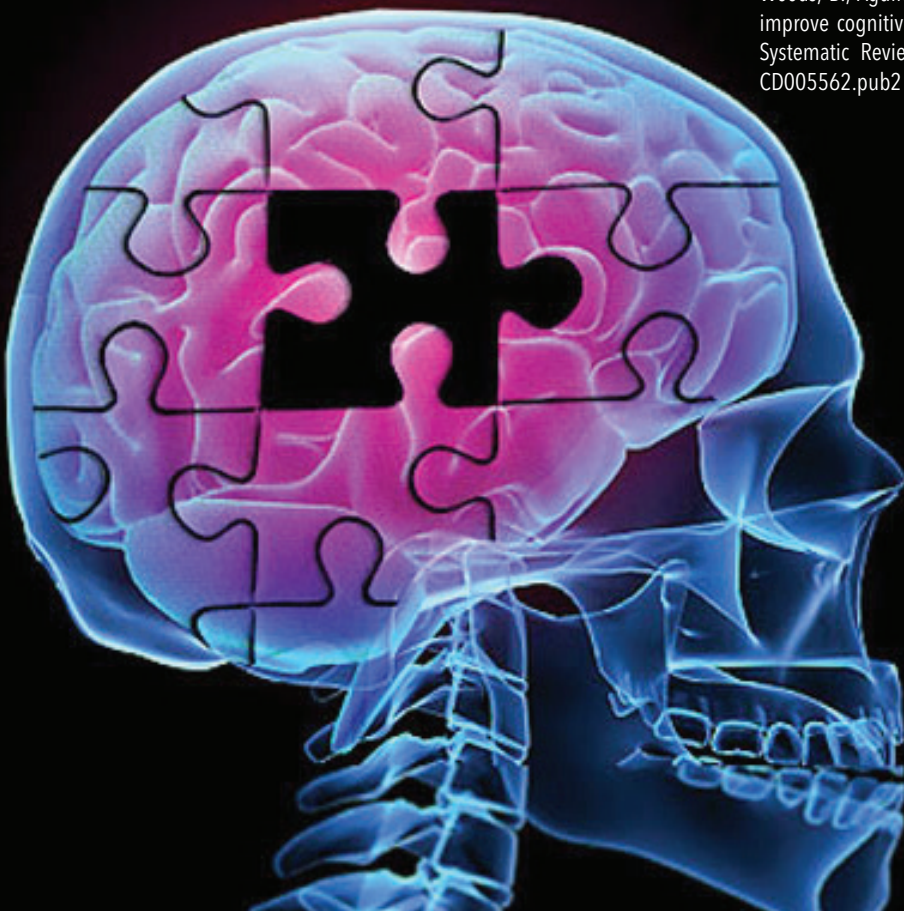
The main analysis of these trials were to look at the improvement immediately after the treatment period. The results has shown a clear beneficial effect on the cognitive function of patients, especially with regards to thinking and memory. The greatest beneficial effect was noted to be immediately after the intervention and these improvements were shown to continue at follow-up, 1-3 months after the end of cognitive stimulation. Additionally, the patients reported that they had an improved quality of life. According to their own opinion and the opinions of their caregivers, they were also better at communication and social interaction in general than before.

The authors conclude that more research is needed on just how long it is beneficial to continue cognitive stimulation and exactly how long the effects of particular intervention last.

Patients with Alzheimer's disease get progressively worse as the amount of brain damage increase. As such, the more that can be done to ward off further brain damage, the better it is in regards to disease progression and improved quality of life for patients. Even further research into the effects of mental stimulation will be very useful in combating this disease.

### References

Woods, B., Aguirre, E., Spector, AE., Orrell, M. (2012) . Cognitive stimulation to improve cognitive functioning in people with dementia. Cochrane Database of Systematic Reviews, 2012(2), Art. No.: CD005562. doi: 10.1002/14651858.CD005562.pub2





# Caffeine Intake and Parkinson's Disease

## What Is Parkinson's Disease?

It is a highly prevalent neurologic disease seen in both men and women. Currently, it affects 1% of the population, especially those above 60 years of age.

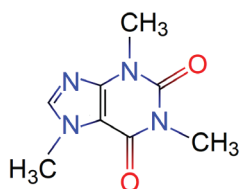
Till date, the root cause(s) still remain vague in the medical world. Although palliative treatment to help curtail a number of its symptoms are accessible, neurodegeneration – the gradual loss of a neuron's ability to function normally – occurs in the substantia nigra as Parkinson's disease progresses; this leads to a decrease in dopamine levels which in turn causes an imbalance between other neurotransmitters such as acetylcholine and dopamine. This causes a disturbance in muscle function thereby resulting in difficulty with kinesis (Jaslow, 2012).

Diminished substantia nigra as seen in Parkinson's disease



## Why Caffeine?

A lot of confectionery food products that contain caffeine are regarded as psychostimulants. In fact, caffeine is a part of the xanthine group of drugs used worldwide as psychoactive drugs. It is said to serve as a protective factor against Parkinson's disease by blocking the adenosine A2A receptor, thereby increasing the level of dopamine in the brain (Postuma, et al, 2012).



## Moderate Caffeine Consumption and the Risk of Developing Parkinson's

The inverse relationship between moderate caffeine intake and Parkinson's disease has been shown in previous studies, which include a number of prospective cohort studies. Some other studies have helped in proving that caffeine may be the underlying active component, which protects dopaminergic neurons, but unanswered questions still remain, regarding the evidence linking caffeine and Parkinson's (Ross, et al, 2010).

## Important Highlights of Previous Research

- Moderate caffeine intake correlates with a reduced risk of developing Parkinson's;
- The effect in women was not as significant as that seen in men, especially in women on HRT (hormone replacement therapy);
- There is an existing dose-response relationship between caffeine intake and Parkinson's disease risk;
- Optimal coffee consumption appears to be three cups daily;
- Parkinson's disease patients who took moderate amount of coffee exhibited an overall improvement in symptoms on moderate caffeine consumption;



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- Moderate caffeine intake was discovered to cause a betterment in motor symptoms but regarding sleepiness in the daytime, only a small effect was noticed;
- In Europe, approximately 1.2 million people are estimated to have Parkinson's disease, with an annual diagnosis of new cases up to 75, 000.

## The Affinity Between Caffeine and Parkinson's Disease

A large number of epidemiological studies point to a preventative role of caffeine consumption in the development of Parkinson's disease; research shows that the moderate consumption of the former reduces the possibility of the latter in the near future. In Honolulu Heart Program, researchers studied the supposed relationship between the occurrence of Parkinson's disease and moderate caffeine intake in 8,004 men of Japanese-American heritage over a 30 year period. The researchers found out that only 120 of these men developed Parkinson's disease. Those who drank coffee were found to be less susceptible. The men who consumed the largest amount of coffee were the least likely to get Parkinson's disease (see graph below) and the men who did not take coffee at all were five times more likely to exhibit symptoms of Parkinson's disease than the ones that consumed about 28 ounces of coffee daily. Consumption of caffeine from other sources such as green/black tea, chocolate, soda etc. has also been linked with a lower risk of Parkinson's disease.



In conclusion, though research over the years is suggestive of a link between caffeine and Parkinson's disease, the hypothesis has not been widely proven. As usual with previous preliminary studies, further research is required to establish this fact (Palacios, et al, 2009).

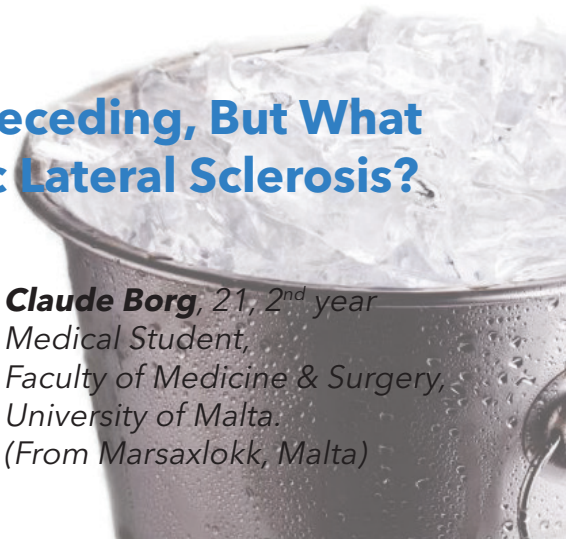
## References

G. Webster Ross, MD; Robert D. Abbott, PhD; Helen Petrovitch, MD; David M. Morens, MD; Andrew Grandinetti, PhD; Ko-Hui Tung, MS; Caroline M. Tanner, MD, PhD; Kamal H. Masaki, MD; Patricia L. Blanchette, MD, MPH; J. David Curb, MD, MPH; Jordan S. Popper, MD; Lon R. White, MD, MPH: Association of coffee and caffeine intake with the risk of Parkinson disease. <http://www.ncbi.nlm.nih.gov/pubmed/10819950>

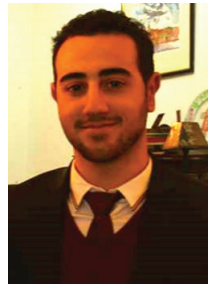
Palacios N, Gao X, McCullough ML, Schwarzschild MA, Shah R, Gapstur S, Ascherio A. (2009). Department of Nutrition, Harvard School of Public Health, Boston, MA 02115, USA. <http://parkinsonsdisease.researchtoday.net/archive/9/9/3159.htm>

R B Postuma et al, 2012, Caffeine for treatment of Parkinson disease: A randomized controlled trial, *Neurology*, volume 79: Neurodegenerative disorders; <http://coffeeandhealth.org/2012/08/r-b-postuma-et-al-2012-caffeine-for-treatment-of-parkinson-disease-a-randomized-controlled-trial-neurology-volume-79/>

# The Era of the Ice-Bucket Challenge Is Receding, But What Do We Really Know About Amyotrophic Lateral Sclerosis?



Over the past few months amyotrophic lateral sclerosis (ALS) has garnered significant international exposure as a result of the phenomenon known as the Ice Bucket Challenge. As most of us know, this initiative encouraged people to dump a bucket of ice water on themselves in an attempt to promote awareness of the disease and raise money for its research. Needless to say it went viral, taking social media by storm as we were bombarded with an endless stream of videos. As a result, over \$100 million has been raised to date and I seriously doubt there is anyone among us who hasn't at the very least heard of ALS and the famed Ice Bucket Challenge. Despite this however, how much do we actually know about the disease itself?



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More commonly known as Lou Gehrig's disease after the famous baseball player whose struggle brought the condition to international attention, the condition affects as many as 400,000 individuals worldwide, killing close to 100,000 each year (International Alliance of ALS/MND Associations, 2015). Europe alone accounts for around 40,000 cases and sees roughly 15,000 new cases a year with a median incidence rate of 2.08-100,000 people. (Chio, et al., 2013)

According to the ALS Association; Amyotrophic Lateral Sclerosis/Motor Neuron Disease "is a progressive neurodegenerative disease that affects nerve cells in the brain and the spinal cord". Motor neurons extending from the brain to the spinal cord and subsequently to muscles begin to deteriorate at an alarming rate, disrupting the body's ability to initiate and control muscle movements. Complete paralysis may occur in the later stages of the disease, with most sufferers succumbing to ALS as a result of compromise of the respiratory muscles on average 2-5 years after initial diagnosis. There is however significant variability in the progression of ALS; with life expectancies ranging from a few months to decades (Gordon, 2011). One famous example being that of the theoretical physicist Stephen Hawking; who diagnosed at the tender age of 21 is still alive today 52 years later.

Affecting both upper & lower motor neurons (UMN/LMN), various symptoms present themselves. Hyperreflexia with increased muscle tone and weakness are classical UMN signs, whilst LMN signs include muscle wasting and weakness, fasciculations and hyporeflexia. Initial presentation in affected individuals varies significantly as specific areas are affected. Regardless of this, weakness and muscle atrophy eventually extend to a wide range of other muscles (Kinsley and Siddique, 2012). Due to these non specific, generalised symptoms during the early stages of the disease, no one true test for the diagnosis of ALS exists. This therefore has to be based on a system of exclusion, where the physician performs a series of tests to rule out other diseases with similar presenting symptoms. Therefore a full medical history, neurological examination and regular follow-ups to assess progression of symptoms are essential (NINDS, 2013).

The cause of ALS isn't fully understood, however certain risk factors have been suspected in playing a role in the disease. The main risk factor is a hereditary genetic defect on chromosome 21, leading to familial ALS (FALS) in around 5-10% of cases. The gene normally codes for Superoxide Dismutase (SOD), an enzyme and antioxidant which protects motor neurons from oxidant damage. SOD mutations are only evident in 40% of FALS cases which suggests the involvement of other

unknown genetic defects. The aetiology of the major form of ALS; Sporadic ALS, has yet to be determined, though evidence suggests that excessive glutamate levels leading to excitotoxicity, enzyme and immune system abnormalities may play a role in motor neuron death. Other suspected triggers include fertilizers, viral infections, severe physical trauma and heavy metal exposure, though more research must be performed to verify this. Perhaps the most interesting risk factor of all is a dietary neurotoxin. The amino acid beta-Methylamino-L-alanine (BMAA); believed to be a causative agent in the aptly named Guamanian ALS, is found in the seed of the cyad plant native to Guam. When previously incorporated as a dietary staple, an exceptionally high incidence was noted in the Guamanian population (Miller and Gelinas, 2005).

Unfortunately ALS remains incurable at this stage, however the drug riluzole is routinely used to delay symptoms and prolong life. Other therapies are used as a form of palliative care to help manage symptoms which interfere with daily activity including diazepam or baclofen for spasticity, physical therapy and breathing devices (Shaw, 2011).

Though the Ice Bucket Challenge was by all means a success, campaigns should continually be made in order to increase awareness and strengthen peoples understanding of ALS. As always, further research is fundamentally important in order to try and shed light on the disease and hopefully find a viable cure.

## References

- Amyotrophic lateral sclerosis (ALS) fact sheet (pp. 13-916). (2013). Bethesda, MD: National Institutes of Neurological Disorders & Stroke (NINDS).
- Chiò, A., Logroscino, G., Traynor, B., Collins, J., Simeone, J., Goldstein, L., & White, L. (2013). Global Epidemiology of Amyotrophic Lateral Sclerosis: A Systematic Review of the Published Literature. *Neuroepidemiology*, 41(2), 118-130. doi: 10.1159/000351153.
- Gordon, P. (2011). Amyotrophic lateral sclerosis: Pathophysiology, diagnosis and management. *CNS Drugs*, 25(1), 1-15. doi: 10.2165/11586000-000000000-00000.
- International Alliance of ALS/MND Associations. (2015, n.d.). Retrieved February 8, 2015, from <http://www.alsmndalliance.org/>
- Kinsley, L., & Siddique, T. (2012, May 31). Amyotrophic Lateral Sclerosis Overview. Retrieved February 7, 2015, from <http://www.ncbi.nlm.nih.gov/books/NBK1450/>
- Miller, R., & Gelinas, D. (2005). *Amyotrophic lateral sclerosis* (1st ed.). New York: Demos Medical Pub.
- Shaw, P.J. (2011) Amyotrophic lateral sclerosis and other motor neuron diseases. In: Goldman, L., Schafer, A.I. (2011). *Cecil Medicine* (24th ed.). Philadelphia, Pa: Saunders Elsevier; 2011: chap 418.





# Depression and Stress

## Depression

There are various types of depressive illnesses but they are all characterized by a persistent feeling of melancholy and associated biological symptoms for a period lasting more than three weeks. Depression can also arise secondary to painful organic diseases, other mental illnesses such as Obsessive Compulsive Disorder, and habits such as alcoholism or drug abuse. Even though one cannot do anything about the hereditary causes of depression, there is a lot that can be done by advising against the causes of secondary depression as previously mentioned. As depression can also have adverse life events in its etiological implications one can advise adequate psychological treatment for those who have passed through difficult times. Doctors should be keen on fishing out for stressful things that patients can sometimes conceal, such as bullying, as well physical or psychological domestic abuse, and direct these individuals towards available treatment strategies in the country.

**Dr. Etienne Grech MD, MMCFD, MP**

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# The Clinical Signs of Depression and the Benefits of Seeking Professional Help

Depression is a serious condition. It's also, unfortunately, a common one. The World Health Organization characterizes depression as one of the most disabling disorders in the world, affecting roughly one in five women and one in ten men at some point in their lifetime.

## What Are the Signs of Clinical Depression?

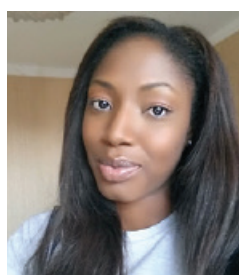
According to the National Institute of Mental Health, symptoms of depression may include; difficulty concentrating, remembering details, and making decisions, fatigue and decreased energy, feelings of guilt, worthlessness, and/or helplessness, feelings of hopelessness and/or pessimism, insomnia, early-morning wakefulness, or excessive sleeping, irritability, restlessness, loss of interest in activities or hobbies once pleasurable, including sex, overeating or appetite loss, persistent aches or pains, headaches, cramps, or digestive problems that do not ease even with treatment, Persistent sad, anxious, or "empty" feelings, thoughts of suicide or suicide attempts.

Although there have been many studies into whether or not there is a point to treatment, the main beneficial treatment options available to patients diagnosed with depression are: Lifestyle changes, Psychotherapy (Cognitive Behavioral Therapy CBT), Medication, and Neuromodulation.

**Psychotherapy** - Usually referred to as Cognitive Behavioral Therapy (CBT), it relies upon the interchange between an individual (or group) and a trained counselor to help bring about positive changes in thoughts, feelings and behaviors. The goal of psychotherapy is to help individuals address the issues that contribute to their depression, including resolving conflicts, improving family and work relationships, recovering from trauma or loss and learning how to deal with recurrent stress.

Therapy for depression works in many ways providing emotional support, problem solving, examining and changing thinking styles, looking at behavior, teaching social and other life skills. Good therapy quickly breaks the cycle of depression in as many places as possible and gives one the skills to ensure it stays that way.

**Medication (Pharmacotherapy)** - In recent years, more and better medications have been developed to treat depression. The "usual suspects" include TCAs ( Tricyclic drugs), Monoamine Oxidase Inhibitors (MOIs), Selective Serotonin Reuptake



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Inhibitors (SSRIs), Serotonin and Norepinephrine reuptake inhibitors (SNRIs). Despite extensive development no one type of medication has been shown to be more effective than the other. Pharmacotherapy seems to be more effective for moderate-severe depression. When administered properly, they can help many people find relief from the symptoms of depression, with manageable side effects.

**Neuromodulation** - The administration of electrical (or magnetic) currents to stimulate the brain and alter (or "modulate") brain activity. Neuromodulation techniques can be beneficial to patients who have not found relief with other treatment approaches (a condition known as treatment resistant depression, or TRD).

**Lifestyle changes** - Self-care steps are equally important to help beat depression. Good nutrition, exercise, healthy sleeping habits and better stress management are all beneficial.

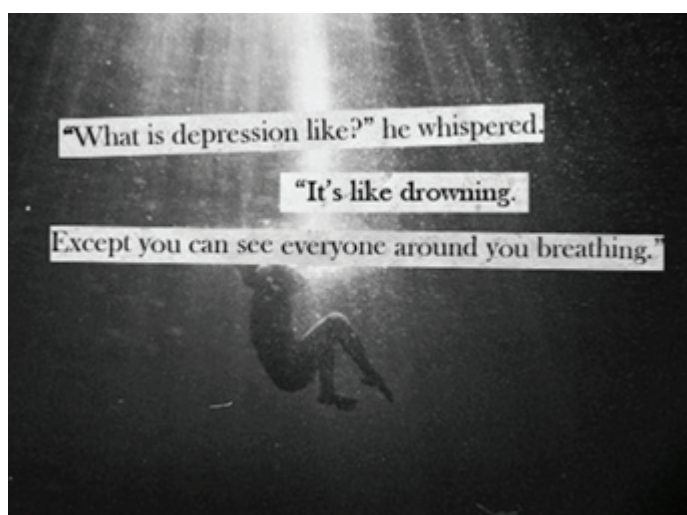
It's a fact that depression tends to return over time; even when it is initially diagnosed and treated successfully. Although depression can be a complicated illness to diagnose, treat and manage, working with an experienced healthcare provider, can determine the best treatment option or combination of options. For example, the combination of pharmacotherapy with psychotherapy is the most effective approach. Over time, individuals and their healthcare providers may need to try more than one treatment strategy before arriving at a successful and beneficial plan.

## References

David Bienenfeld, MD Professor, Departments of Psychiatry and Geriatric Medicine, Wright State University, Boonshoft School of Medicine, Wolters Kluwer Royalty Author, Coauthor- Kelly N Stinson, MD Resident Physician, Department of Psychiatry, Wright State University, Boonshoft School of Medicine for Medscape

Newer and Older Antidepressants have similar efficacy - Anthony J. Pelosi, MRCPsych, Liz Ashton, MRCPsych, Hairmyres Hospital, Glasgow, Scotland, UK (2001-2015 meta-analysis). Published on February 20, 2012 by Carolyn C. Ross, M.D., M.P.H. in Real Healing National Institute of Mental Health website

Psychotherapy Versus Medication for Depression: Challenging the Conventional Wisdom With Data - David O. Antonuccio and William G. Danton, University of Nevada School of Medicine and Reno Veterans Affairs Medical Center Garland Y. DeNelsky, Cleveland Clinic Foundation. (2001-2015 meta-study)



# Worldwide Suicide Rates by Profession

## Physicians Amongst the Top

After cancer and heart disease, suicide accounts for more years of life lost than any other cause of death. Fortunately thanks to many awareness programs and media the problem is more pronounced and suicide prevention has gone a long way with the help of psychologists, medication, hotlines, internet forums or support groups. It is known that certain groups of society are more or less at risk of developing this illness and what sometimes unfortunately follows, committing suicide.

There are select professions that come with higher than others rates of suicides. The top five are physicians, marine engineers, dentists, veterinarians and finance workers respectively (curiously enough lawyers taking a farther position at 12). There are multiple factors that can influence a person's decision to end their life. The American Foundation for Suicide Prevention lists factors such as a family history of suicide attempts, substance abuse disorders, mental health issues, exposure to graphic or sensationalized accounts of suicide and access to lethal means including firearms. While these are insightful, they are not specific to any work group. The most relevant factors pertaining to careers are low income, accessibility to lethal substances and high levels of stress. While all these occupations are linked to a stressful work environment some things are more pronounced in each field. Marine engineers often work below ground in rooms which are void of sunlight, which leads to vitamin D deficiency that usually leads to depression. Physicians and veterinarians on the other hand are exposed to situations of death and pain that can link to future existential and suicidal thoughts. Dentists, it is said, are subconsciously haunted by the notion of inducing fear to their patients.

Each year roughly 400 physicians die by suicide with the rate being almost 4% in this profession. The most significant determinant is being knowledgeable about toxic and lethal doses that make the attempts more successful. Medical students in general have up to a 30% higher rate of depression than the general population. In medical school there seems to be no time to focus on personal health and lifestyle modifications but



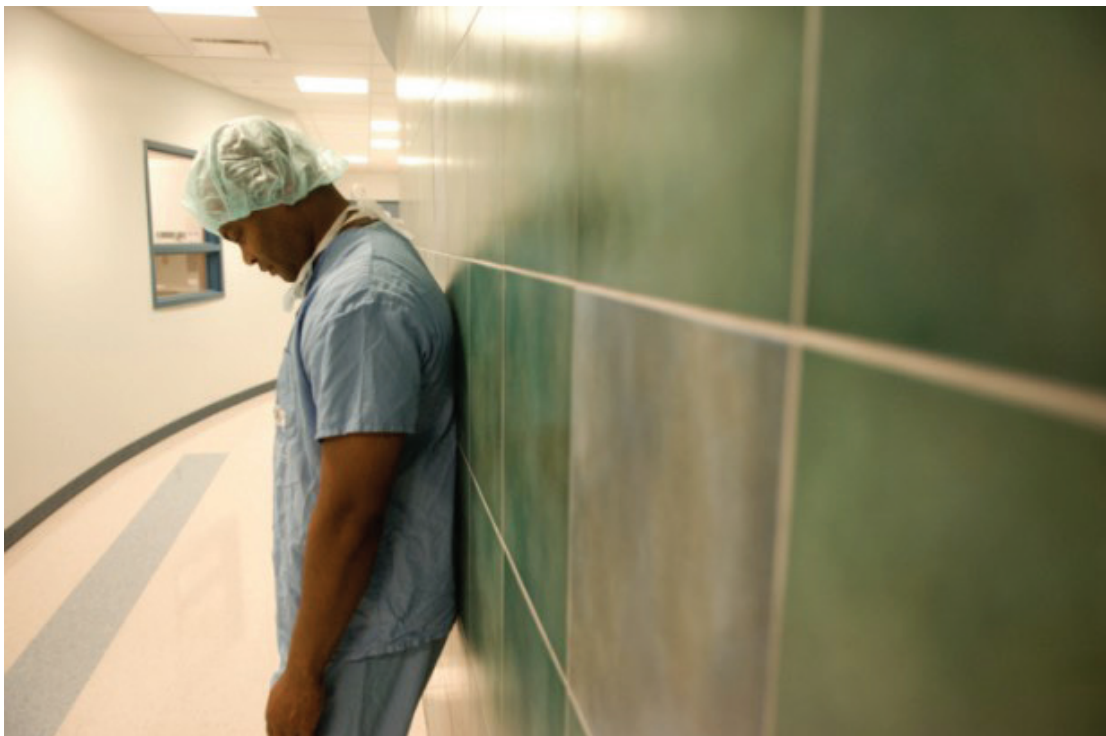
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*(From Warsaw, Poland)*

only on learning how not to harm another human being, often forgetting that giving yourself as an example speaks more than a thousand words. Substance abuse, stress levels and poor physical health only pile up with each year and even though young minds and bodies can cope with it in college, the sum of it all may turn out to be overwhelming in later life. If certain habits of coping with stress and preserving mental and physical health are developed early on, the future doctor or dentist has a greater chance of avoiding burnout, depression and suicide.

There are certain alarming signs to take into consideration when trying to spot out a potential suicide attempt. These include talking about feeling trapped, unbearable pain, having no reason to live or being a burden; acting isolated, aggressive, anxious, depressed or irritable, withdrawing from activities, isolating from family and friends, sleeping too little or too much, giving away prized possessions or calling people to say goodbye. If you observe these, stay alert and do not hesitate to take action.

### References

The American Foundation for Suicide Prevention (2014) : <https://www.afsp.org>





## A Cry For Help!



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and



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Mental health problems can be more common than you think. They aren't as obvious as some somatic diseases but they can affect you too. Do you know that according to the WHO predictions, depression will be the second (among 10) leading causes of the global burden of diseases by the year 2020? Nowadays depression contributes to the death of 1 million people around the world per year because it is the main risk factor of suicide. As data from the WHO shows; 6 out of 20 countries with the highest suicide rates in the world are in the European Region.

The challenge is to change the way of thinking about mental health. Imagine, one day you or your friend might experience a mental health problem. What would you do?

First and foremost, don't hesitate to talk about the problem and visit a specialist. It's nothing to be ashamed of. If someone you know has a mental disorder, encourage him or her to seek help. It isn't a sign of weakness. Secondly, try to understand this disease and provide support to people who need it.

***Don't be passive once you hear a cry for help. Let's end mental health stigma.***

Epikur said, "**For no age is too early or too late for the health of the soul**". Mental disorders have always existed. Even in antiquity, there were some theories concerning this issue. So why are mental disorders still stigmatized and misunderstood?

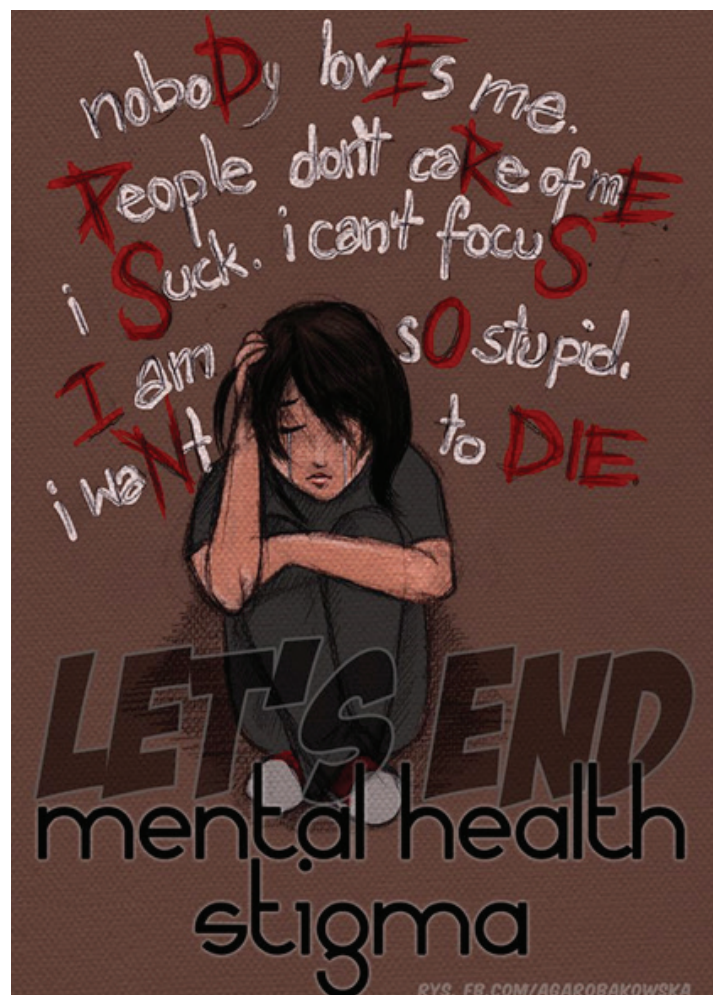
When we think about health, we usually only mean the somatic side of it, but we forget that according to WHO's definition; health isn't only the absence of disease, but also mental well-being. Good mental health is essential to deal with everyday situations.

If we feel mentally healthy we will work productively, interact with other people more easily and just enjoy life. We can list a lot of determinants of mental health e.g. socioeconomic, biological and environmental. If some of those components are disrupted, it can contribute to the occurrence of many different mental disorders such as; depression, bipolar affective disorder, schizophrenia and other psychoses.

People suffering from mental health avoid discussions about their problem because they are afraid of misunderstanding - it is a vicious cycle. If you don't talk about a problem it doesn't mean that everything is okay. Moreover, it can lead to more frustration and loneliness. It is worth emphasising that for many years, there has been a strong belief that people with mental disorders are perceived as less intelligent or simply stupid.

This was a form of discrimination and it had a negative impact on their lives.

People with mental disorders are often the object of neglect. It is horrible that these days we can still observe difficulties which are encountered by them (abuse of human rights, rejection and isolation). People suffering from mental disorders also experienced problems with obtaining jobs. They are excluded from everyday activities and support. It justifies fears to speak out about their problems. Therefore, it is really important to fight the stigma.





# The Nuisance of Mental Health Stigma



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In the European Union every year, 1 out of 15 people suffer from depression and this is just one of the many different mental disorders that can affect people. However there are other common mental illnesses for example anxiety disorders, schizophrenia, insomnia, bipolar disorder, psychoses or dementia. So in total 38% of the European population are suffering each year of several mental disorders.

But even though there are so many people affected by mental illnesses it is still not respectable to talk about it in public for the reason that mental disorders are stigmatized by society. But how did stigma develop in connection with mental health problems?

Often people recognise mental disorders from films or other media and then develop stereotypes and prejudices without having real knowledge. But not every person who suffers from schizophrenia is like the crazy violent man or the totally de-

pressed lonely girl in the movie or book. Media forms false beliefs, illusions and maybe even fear towards people with mental health problems so that discrimination and even loneliness can be promoted within society. Patients would be afraid due to the existing stigma to talk to their friends and family about their problems and disorder because they do not feel supported or understood and this would lead to loneliness and discrimination.

Stigma can lead to isolation, lowering of self-esteem, frustration, hopelessness and also shame. Patients feel embarrassed and start to hide their problems, but they can contact a professional like a psychiatrist and seek for help - without doing so they will get even sicker and get caught in a vicious cycle. It is often also a problem for patients to even admit they have a mental health problem as many still think that it is a sign of weakness or they are of a less value because of their mental disorder. Another dilemma is also how to tell your boss that you have depression? Since a lot of employers have prejudices towards people with mental disorders and think they are not able to perform tasks well or are irresponsible even though before the diagnosis they were really good employees. The lack of understanding and education really makes it complicated for mental health disorders to be as accepted as other disorders.

That is why society should learn more about all the mental disorders, their symptoms and also their treatments to become aware what a mental health disorder really is and that there is no need to stigmatise it or the patients. It is absolutely necessary to improve the education about mental health disorders in order to avoid stigmatisation and discrimination and to really help people with mental illnesses.



# My Healing Heart's Bereavement Advice



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The loss of a loved one is a dreadful event that the majority of us are likely to experience at some point in life. The earlier it happens and the more significant the loss is, the greater the intensity of the bereavement process. This is likely due to the huge transformation sudden death will bring about in ourselves, the way we look at our surroundings, and our perspective towards life itself. While there is no right or wrong way to grieve, dealing effectively with the associated pain is a central process that will permit us to move on with our own lives.

The bereavement process is a completely natural, but a highly personal response to loss. How we grieve ultimately depends on a multitude of factors, such as personality, support and coping mechanisms, faith, as well as the nature of the loss itself. But one thing remains in common: healing takes time and it happens gradually. It can't be forced or hurried, and it is imperative to understand this. Some people start to feel better in weeks or months. For others, the bereavement process is measured in years. Despite repetitively hearing comments such as "Hold on, be strong!" or "Life goes on!" it is important to be patient, and to allow the process to naturally unfold. We grieve in no one's acceptable way, but our very own.

The psychiatrist Elisabeth Kübler-Ross introduced what today is known as the five stages of grief, i.e. Denial, Anger, Bargaining, Depression and Acceptance. Contrary to popular belief, we do not have to go through all these stages in order to heal. Moreover, it is very probable that we do not experience them in a sequential order. Personally, I like to think of the bereavement process as a roller coaster, full of steep highs and lows. The ride tends to be rougher in the beginning, but fortunately, it tends to become less intense as time goes by.

Right after a loss, it can be hard to accept what really happened, and it is highly likely to deny the truth. Whilst our body is in a state of shock, we may feel numb, but we may keep expecting our loved ones to show up even though we are fully aware they are gone. We may also regret some things we did, or perhaps feel angry about a bunch of loving words that we did not have the opportunity to express to the deceased. Others may feel guilty about their inability to do anything to prevent the death of a close relative or a friend.

Profound sadness is the most universally experienced symptom of grief. It may be accompanied with feelings of emptiness, despair, yearning or loneliness. Many of us may cry, or continuously feel anxious or insecure as the death of a loved one can trigger fears about our own mortality, or the responsibilities we will now be facing alone. In addition to periods of emotional instability, the bereavement process often involves physical symptoms such as headaches, fatigue, nausea, lowered immunity, weight loss or gain, insomnia, intestinal disturbances or chest tightness.

The number one step of coping effectively with grief is to accept support, wherever it comes from. Now is the ideal time to turn to our close friends and family members, or join a bereavement support group where we may share our sorrow with people who have experienced similar circumstances in life. It is vital that we do not try to ignore our pain, but seek to address it actively. Keeping it from surfacing will only make it worse in the long run. Moreover, it is vital to recognize that if we find ourselves crying in the middle

of our daily routine, it does not mean we are weak, but it is often a sign that we are thinking dearly of our loved ones. Thus, we have to embrace these moments by letting go of the desire to put on a brave-front mask.

Furthermore, it is ideal to prepare ourselves psychologically for 'grief-triggers', due to the fact that special events, such as family weddings, holidays, or other important milestones, for instance graduation ceremonies or the birth of a child, can reawaken grief memories and mixed feelings. It could also turn out to be helpful to express our feelings in a tangible and creative manner. We could seek to write about our loss in a journal or be conservatively open about it on social media, create a photo-album, or another form of artwork depicting the deceased person's life, or get involved in sports or voluntary work organizations. Whatever our personal interests are, now is the time to fill up our life with activities we like doing.

Another vital step throughout this difficult period in our life is to look after our mental and physical health. It is very probable to experience concentration difficulties, most likely because we will automatically find ourselves focusing attention on how our relative, or friend, has died, or how our life together was close to perfect before they died. Stress and fatigue can be combated by getting enough sleep, eating well and exercising regularly. Moreover, counseling therapists and family physicians are always available to lend us a helping hand - most especially if we distinguish symptoms of complicated grief or clinical depression from a normal bereavement process.

It is expected for grieving people to prefer spending time alone. Sometimes we are drawn to the quietness and safety we experience in our own bubble of thoughts, or else it may simply be a way of dodging other individuals, for various reasons. Even venturing out to the local grocery store or shopping mall can make us feel uncomfortable at this frustrating period in our life. At often times, we find ourselves resenting how much we take everything for granted or may feel jealous of our peers that are not going through such excruciatingly painful moments. Fortunately, these feelings are usually temporary.

Acceptance is the final, glorious step of the bereavement process. Ultimately, we will be able to accept that loss is a basic part of our life cycle. Whatever grows must decay. Whoever is born must die. It is only after these universal facts are fully understood and accepted, that we will find ourselves seeking alternative sources of security and happiness. Always bear in mind that we will pull through, because we are all greater than the hardship life chooses to throw at us. Until then, I wish you all the best in plucking up the strength and courage to create a better tomorrow.





# Stress and Burnout in Medical Students and Junior Doctors

## The Mental Price of Medicine

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(From London, United Kingdom)



Stress, burnout, nerves ... whatever you want to call it, mental problems are a big problem in the world of medicine. Depression, anxiety and nervous breakdowns are all a feature of many young medical lives. So what can we do about it?

These types of disorders have an impact on many aspects of life, not just academia. Medicine is notorious for being extremely stressful, often making students vulnerable to depression, anxiety and burnout. Succeeding medical school is a life time of similarly stressful living throughout one's career. Several studies prove that when demands continue to rise and no adjustments made, there is an increased risk of burnout and mental impairment. An individual's family background, overwork, emotional stress, outside stress, self-critical personality are all factors which can make a person more susceptible (Gentile, 2009).

The cost of depression in Europe is estimated to be around 6% of the total disease burden (Sobocki, et al., 2006). 21 million out of 466 million people across 28 European countries were affected by depression, totalling 118 billion as of 2004. In fact, the World Health Organization classifies depression as the most costly psychiatric disorder in Europe.

A sad effect of severe mental problems is suicide. In fact, it had been estimated by Gentile (2009) that roughly 50% students suffer from burnout, and 10% contemplate suicide with the former increasing the chances of the latter. Suicide is higher in student populations than the average population. Despite doctors knowing that alcohol, excessive eating and drugs are detrimental to health, they are often found to be alcoholics, obese, and smoking marijuana.

Stigma is a known factor responsible for the lack of uptake of treatment. Other effects such as strained social interactions, poor quality of life and decreased self-esteem are prevalent too. Self and public stigma guide how we feel about ourselves and colleagues' suffering (Batterham, et al., 2013). It has also been found in another study that medical students are less likely to seek professional help and use more informal sources of information such as family or friends as well as self-diagnosis and self-treatment, something which should not be encouraged. The study by Brimstone (2007) identifies that junior doctors find it difficult to play the role of the patient in front of another doctor, adopting behaviours from their clinical role

models. It seems that "doctors make the worst patients" has a ring of truth about it.

Anxiety-related disorders have a detrimental effect on cognitive performance. It has been found that anxiety disrupts processing and storage resources of working memory. Depression also displays the same effects on cognition; studies have shown that cognitive decline occurs when subjects were asked to perform cognitive tests (Bierman, 2005).

Education on the symptoms and situations that causes these disorders is the best weapon against them. Early identification is key, and intervention should be sought as soon as possible from a specialist.

### References

- Batterham, P. (2013). Predictors of generalized anxiety disorder stigma. *Psychiatry Research*, 206(2-3), 282-286.
- Bierman, E. (2005). Effects of anxiety versus depression on cognition in later life. *The American Journal of Geriatric Psychiatry*, 13(8), 686-693.
- Brimstone, R. (2007). Behaviour of medical students in seeking mental and physical health care: Exploration and comparison with psychology students. *Medical Education*, 41(1), 74-83.
- Gentile, J. P., Roman, B., & Gillig, P. M. (2009). Medical student mental health services: Psychiatrists treating medical students. *Psychiatry*, 6(5), 38-45.
- Sobocki P, Jönsson B, Angst J, Rehnberg C. (2006). Cost of depression in Europe. *The Journal of Mental Health Policy and Economics*, 9(2), 87-98.





# Medical Students and Mental Health

## Is Medical School Driving Us Mad?



**Rok Hrzič & Tin Knezevic**

*EMSA (Europe) Working Group on Lifestyle Medicine*

You're taught from the day you start medical school that you're a God, that you can have power over life and death. So when your life starts to crumble and the highest power you see is looking back at you in the mirror - and you know that power is flawed - it is very hard to get past that. - Michael Palmer, M.D.

Medical school is famous for being tough. It has the perception of being perhaps the greatest academic challenge available in European undergraduate studies. This challenge is also what attracted many of us to start on the journey to becoming doctors, not withstanding, of course, the more noble motives of service and humanity that pervade the community.

But with clinical physicians and medical students exhibiting significantly higher levels of stress-associated mental disorders (mostly depression and anxiety disorders) when compared to the general public, we are increasingly faced with a seemingly appropriate question: is it worth it?

Far from being a local phenomenon, stress-related mental health difficulties are a Europe-wide phenomenon, with a current survey identifying up to 40.8% students with an increase in anxiety and rates of elevated depressive symptoms. In 16.9% of the participating students these symptoms showed clinically relevant severity.

Medical studies, according to some research, seem to be designed in a way that makes undertaking them inherently stressful, mostly due to the "interaction between the demanding nature of their work and their often obsessive, conscientious, and committed personalities." In essence, becoming successful medical students academically and otherwise, is made difficult when found in a context, where the centre of control lies squarely outside ourselves and where rewards for hours of hard work are few and far between.

So what can we do about it?

Well... You can look at the problem from two angles; more spe-

cifically, you can look at the system and try to fix it or you can take a long gaze at yourself and see how to adapt or grow?

When thinking about the system, one hero comes to mind and that is Don Quixote. Yes, changing the system is a very noble thing to do, but let's face it - we are simply not in the position to do a lot. This is not to say that we should be blind to the nature of the problem or disinterested in it, quite the opposite, as Gandhi said we really should be the change we want to see in the World, but the fact remains that we do have to pass our exams, survive the system and learn to let some windmills do what they do... Spin.



The one thing we can influence for sure is ourselves; our attitude, our motivation and our mental well-being. As the old joke says, a thousand psychologists cannot change a light bulb if the light bulb doesn't want to change itself. There are a thousand paths that lead to happiness; each of us can find our own. Some need a social support group such as friends, some need endorphin rushes and hence run or workout and some find tranquility in meditation. Once we identify how we 'tick' and what charges our own 'batteries', all we need to do is 'plug in and recharge' on a regular basis. Granted, sleeping also helps!

But perhaps one thing that is at the core of this discussion is the Purpose. In his

book 'Man's Search for Meaning', Victor Frankl explains it quite well; "the difference between those who manage to go through tough times and those who do not is a sense of purpose". The harder the times, the deeper the sense of purpose needs to be. And mind you, he based his idea on personal experience of surviving WWII concentration camps!

If all of this sounds a bit perplexing, then perhaps Simon Sinek probably made it easier to understand, when he said that we have to: "Start with Why?". And when you know why, you are doing what you do, the how will eventually come by itself. And in the meantime, there is always another cup of coffee!

# Tobacco Smoking and Alcohol

## The Greatest Comforting Devils



**Katarzyna Rychta, 23 & Agatha Bogucka, 23,**  
*1<sup>st</sup> year Public health  
(Masters degree) students,  
Medical University of Warsaw,  
(From Warsaw, Poland).*

As the WHO data shows tobacco kills nearly 6 million people each year. Moreover it is estimated that tobacco caused 100 million deaths in the 20th century.

It is scared that despite this facts people are still smoking.

Everyone probably knows about the relationship between smoking and occurrence of many diseases. Smoking is responsible for increasing risk for many types of cancer, including can-cers of the lung, bladder, throat and mouth also kidneys, cervix and pancreas.

According to WHO data smoking is estimated to be responsible for 30% of pancreatic cancer and for upwards of 80% of all lung cancers.

We cannot forget about harmful effect of smoking for cardiovascular system. Smokers are at higher risk of developing heart disease such as arteriosclerosis, heart attack, hypertension and stroke. Furthermore smoking cigarettes is a reason of other chronic lung diseases, tooth diseases, rapid ageing of the skin and bad condition of the nails. Women who are smoking during pregnancy expose their children to abnormalities in fetal development which contribute to more frequently deaths of newborns. Many people do not realize that smoking can also lead to problems with fertility among both women and men.

Do you know that there are more than 5000 chemicals in tobacco smoke and at least 250 are known to be harmful to your health?

The chemicals in cigarettes makes you want to keep smoking.

It is estimated that every cigarette you smoke makes your life shorter by 5 minutes, so think twice before you reach for it. Many people are still exposed to second hand smoke, especially children.

For those who are addicted to smoking there are some effective ways to quit. Specialists list behavioural therapies, individual or group counselling and medications.

Some of them are available over-the-counter, for example nicotine gum or nicotine patches. Popular quit smoking medication is Bupropion that helps to reduce nicotine withdrawal symptoms and the urge to smoke. Similar effect has Varenicline but in addition it also blocks the effects of nicotine from cigarettes if the users start smoking again. Important issue is motivation to quit and also discover the benefit of quitting, especially health benefits. In addition to healthier life quitting smoking can make you younger and improve your appearance.

Not only does smoking have a harmful impact on our health, WHO estimated that 3.3 million deaths worldwide were attributable to alcohol consumption in 2012. The consumption of alcohol carries a risk of adverse health and social consequences. Those who drink large amounts of alcohol are exposed to many chronic diseases. Alcohol use is associated with an increased risk of many types of cancer.

WHO's data show that a consumption as low as one drink per day causes a significantly increased risk for cancers of the oral cavity, pharynx, oesophagus, larynx, stomach, colon, rectum, female breast and ovaries. Harmful use of alcohol is also related to risk of developing mental and behavioural disorders. We cannot forget that drinking during pregnancy may cause fetal alcohol syndrome and pre-term birth complications.

Moreover regular drinking of alcohol can lead to damage of liver and even cirrhosis.

There are a lot of studies which suggest a cardioprotective association between low alcohol consumption and beneficial effect for ischaemic heart diseases and ischaemic stroke.

However some people interpret it in wrong way. They are convinced that glass of wine every day protects them from cardiovascular problems and often it is a reason of alcohol abuse.

Stress accumulation can be another reason for alcohol consumption. Nowadays we live under time pressure, we are overwhelmed and it contributes to searching for ways to alleviate our stress. It is a vicious circle because alcohol drinking is a temporal solution and it improves our mood for a moment. Irish playwright and co-founder of the London school of Economics George Bernard Shaw said that: "Alcohol is the anaesthesia by which we endure the operation of life". This belief can be still observed in the society.

It is also worrying that according to data from CDC one quarter of adolescents start drinking alcohol by the age of 13. In this situation, peer-pressure plays a key role. Teenagers need to be accepted and they surrender to it. It is also worth emphasising that often they do it in spite of themselves, because they do not want to be made fun of and just do not know how to say no. Some of them are unaware of drinking alcohol consequences in the future. Early drinking initiation can be a reason of the addiction, therefore it is important to pay attention to this issue.

Despite that tobacco smoking and alcohol can easily serve as the greatest comforting devils, life can be full of happiness and great adventures without these types of hazardous comforters.



# Stress-Management

## FOR Med Students, BY Med Students!

The interviewees were asked the following questions by Shafia Khanum, 21, 2<sup>nd</sup> year medical student, Faculty of Medicine & Surgery, University of Malta. (From London, United Kingdom)

1) Do you think life as a Medical Student is stressful? If so, in what way?

2) How do you cope with stress?

3) As a future Doctor, what advice would you give to other students also going through stress?

4) Any additional comments

### Gabriel Ellul, 5<sup>th</sup> year, University of Malta



1) Yes, life as a Medical Student is stressful because you are becoming something you are not; it changes your life mainly due to the things you experience such as breaking bad news, illness which sometimes cannot be treated and dealing with children, which are stressful situations on their own. Prioritising can also be stressful because it completely depends on you and you are not sure if it will be successful or not.

2) The way I cope with stress is by having a 'reward system'. I treat myself with a movie or I go out when I have done my work. However, I reduce the treats during the exam period depending on which exam I have. Also, balancing studies with leisure helps deal with stress.

3) The advice that I would give to other students is that your studies have a purpose, always keep this goal in mind. Besides, only a small percentage of students fail from exams...if I can do it, so can you. And you will!

4) Do not let other people's reactions to stress get to you!

### Kurt Apap, 4<sup>th</sup> year, University of Malta



1) Yes, I think life as a Medical Student is stressful. This is because compared to most other European Medical Schools ours is a year shorter so we have to learn more in less time. Also, negative marking in exams makes it more stressful. However, I think it is manageable.

2) The way I cope with stress is through time-management. I am very active within MMSA and I balance my studies and these commitments by managing my time. This allows me to do things I enjoy and work with different people other than my classmates.

3) The way I cope with stress is by being the Master of it! I believe that if you are in Medical School then you are more than capable of getting through it but don't be afraid to seek for help if you need it. Lastly, concentrate on what you will achieve at the end to motivate you.

4) No additional comments

### Fabrizia Cassar, 5<sup>th</sup> year, University of Malta



1) Yes, I think life as a Medical Student is very stressful. This is because you are expected to have certain knowledge and someone's life is in your hands. Also, there is lots of information to learn and it feels as if it is never enough and there is not enough time for everything, because you have to also prepare for tutorials and lectures. The other thing that is stressful is negative marking. Lastly, prioritising is also stressful.

2) The way I cope with stress is by dancing which is a form of exercise but also a break from work. I also talk about it and express my feelings especially with my parents. Planning and organising my work also helps because I don't have to cram at the end. In addition, I watch short comedy serials, go for drives with the radio on and read which allows me to focus on something else other than studies. Lastly, I do fun activities including getting involved in MMSA which reminds me why I am doing this and allows me to have contact with the public.

3) The advice I would give to other students is that I know it is hard but it has been done before so you can do it as well. Also you are human and you deserve a break so find at least 30 minutes each day to do something you enjoy.

4) Being or feeling stressed is not the end of the world. Remember, you will only be a student once and you are still young so enjoy this time, take up opportunities, travel and meet new people!

### Kristina Bartolo, 4<sup>th</sup> year, University of Malta



1) Yes, I think Medical School is stressful due to a lot of reasons, such as clerking, lectures, going on attachments and doing night shifts. Also, there is a lot of material to cover and you need to balance this with getting practical experience as well, which makes it more stressful.

2) With regards to coping with stress I would like to mention that I like living with stress because it pressures me to do and study more. However, I still have to manage stress and I do this by managing my time through making lists and organising my workload. Prioritising also helps along with giving myself treats. Lastly, I try to finish everything at University so when I go home I can relax. And to do this I love to drive down to the beach and sit there while reading a book.

3) The advice I give to other students is to have good time-management. You also need to prioritise and find time for breaks because you cannot stay indoors and study all the time. I would also suggest getting involved in MMSA because you learn new skills and have fun at the same time! Lastly, studying in the library can be helpful because you study with other people who can motivate you but you can also go on breaks together.

4) The key to life is balance! Keep your hobbies and enjoy University life but take up new opportunities as well. You will have to work for the rest of your life anyway so make the most of it now!

### Valence Uwera, 1<sup>st</sup> year, University of Malta

1) Yes, life as a Medical Student is stressful. This is mainly because of the workload; we have a lot of material to cover in a short amount of time. The structure of the course also makes it difficult, because in first year we have no clinical attachments but if there were, it would have been more motivating. I can't wait for clinical experience to commence in third year!

2) I cope with stress mainly by socialising; meeting new friends, weekends outside and talking. Talking about anything helps! I also like to jog to relieve stress.

3) As a future Doctor, I would advise other students not to forget to socialise, because it is essential to being a doctor: the skill of being a people's person and being relatable. It is also important to balance the workload while being more out-going and meeting new people, both medics and non-medics.

4) No additional comments

### Josiah Damsiah, 2<sup>nd</sup> year, University of Malta

1) Yes, I think life as a Medical Student is stressful. This is because you have to balance the workload and any extra-curricular activities that you do, whether it be social or personal activities.

2) To cope with stress I cook or bake. It's true, I like to cook or bake! I also exercise for one hour each day, sometimes by myself or in a group. Lastly, I watch TV programmes, the funny ones; they make me laugh.

3) As a future doctor, the advice I would give to other Medical Students is that you have to balance your time to have a good work-life balance. Exercise is also helpful and having a timetable can help to organise yourself.

4) I think stress can be a good thing to an individual threshold, to help you to perform at your maximum; so stress does not always have to be negative.



### Darryl Pisani, 3<sup>rd</sup> year, University of Malta

1) I definitely agree that life as a Medical Student is stressful. This is because compared to other courses our lectures are larger and more mentally demanding. The stress becomes more apparent in the third year because although clinicals are more hands-on it involves more independent study as you are expected to read-up and prepare for sessions beforehand. The pressure is also increased by the fact that you are not sure how much you are expected to know beforehand.



2) The way I cope with stress is by playing basketball, because sports stimulate the mind in a different way. It makes you exercise and keeps you active, so we can practice what we preach and it takes your mind off academics. However, I decrease this during exams. In addition, I go out with friends that do not do medicine, because it helps to speak about things other than medicine; it's fun, you form new relationships and experiences. Also, it helps to have a structure and be realistic about it; don't panic if you haven't done something, just wake up earlier or stay up later the next day. All these things help to overcome stress which is very important.

3) The advice that I would give to other students is to not let it affect you too much because this can be unproductive so you need to manage and control it. Also, group studying can be helpful because seeing others study can motivate you to study. Group work can also help in sharing out the workload which reduces stress.

4) Being active in an organisation can help, as it allows for a time out from studies while doing something else that's productive. You can also look at your achievements within that team and the pride can act as a motivator. It is basically a balancing act.

### Masuda Begum, 1<sup>st</sup> year, University of Malta

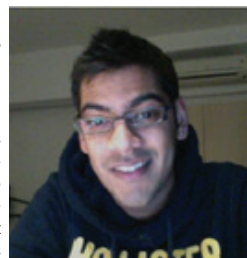
1) Yes, I agree that life as a Medical Student is stressful because there is a lot of work which makes the course very intense. Also, managing your personal life with studying is hard and stressful.

2) The ways I cope with stress is that I pray a lot; I feel it helps me relax. I also run as a form of exercise and stress relief.

3) As a future Doctor I would advise people to do some sort of physical activity such as yoga because it takes your mind off stress and opens up the mind. Praying also helps a lot. Lastly, have fun! Enjoy your degree and don't make studying a chore.

4) No additional comments.

### Asutosh P. Khadaroo, 3<sup>rd</sup> year, Zhejiang University Medical School



1) Busy and stressed are two words that all medical students are normally tagged with. From assignments to presentation via team building and practical lab experiments and hospital visits, we barely find time to do anything extracurricular. While all other students are clubbing and partying, we have to be in the library, at home or in the lab preparing for the innumerable tests and exams we have to take every single week. Online assessment or quizzes comprise our daily dessert prior to going to sleep. Sleep is something very precious to us as we barely can have 5-6 hours of sleep in a night. I can certainly say that we are never invited to any non-academic activities in Med-school. Event organisers always tend to ignore us, as for them medical students are too busy for anything else. Being in China does not help, as there are never holidays, we even have classes on the weekend and we do not have holidays for Christmas or New Year. It is my third year in medical school and it is even harder for me especially given that I am studying Mandarin alongside the medical course as a completely new language since my first year. Yet I still seem to enjoy it as the years pass in Med-School.

2) Going out with friends, travelling and food are my escape routes from stress. When I am out, I try not to think of anything related to classes. At least once every fortnight I would make it a must to go out chilling with some friends. Karaoke is very common where I am in China, even though I cannot sing well. It is also a must for me to travel around. It is a good thing that I am studying in China and I never let away any opportunity to travel and discover China, which, despite high pollution levels, is surprisingly sunny. This definitely brings a smile to my face and whoever smiles, is relieved of stress indeed.

3) Think of the final year, think of your goal. A Medical Student chose this path in view of achieving a goal: contributing to medical care. It is not a mere job that anyone can do. Patience and perseverance should be your two best friends. Never limit yourself to the academic side of Medical school. Make it a must to balance the academic and relaxation time. There is time for everything: for work and for yourself. A medical student has to make time for themselves. Whenever one cannot take it anymore and needs a real break, one has to take it. Strictly do not push yourself beyond your limits.

4) No additional comments

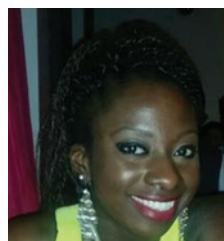
### Wani Vamadevan, 2<sup>nd</sup> year, University of Malta

1) Yes I do think that life as a Medical Student is stressful. This is because of many reasons including the content and amount of information we have to learn. Our timetable is also very packed compared to other degrees and it includes extra activities such as the behavioural sciences seminar which is compulsory and adds to the list of things to do. In addition, because our course is a vocational one we have to think about our career and do extra things for it such as publications, research and extra-curricular activities. Lastly, having exams also makes life stressful.

2) To cope with stress I take regular breaks; not the usual fifteen minute ones but long ones that last a few hours to go out or watch a film. This removes my mind from the problem, so I don't think of it over and over again. But during exams, I take shorter more frequent breaks. In addition, organising and planning things also helps because you understand what you have to do and how long you have to do it so you can pace yourself. Lastly, removing yourself from your area of study can help at times.

3) As a future doctor, the advice I would give other students is don't put things off, at least have a skeleton of a plan and stick to it as much as possible and schedule in other commitments as well, but prioritise between all commitments. Lastly, try to address the stress to work it out or reduce it so it doesn't develop.

4) Stress will not go away by itself, so find out what works for you and what is suitable to you. Know yourself and what works for you and you can deal with it.



### Maxi Twum-Barima, 3<sup>rd</sup> year, University of Malta

1) Yes! Of course life as a Medical Student is hard. What makes it difficult is trying to find a balance between work and other aspects of life. In third year the change in the timetable, such as lectures and the addition of tutorials and attachments also makes it hard. So you have more to balance and you have to balance it all!

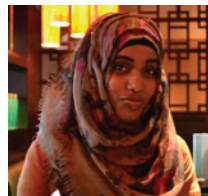
2) I cope with stress by baking! I love to bake and it makes me forget about everything else for a bit. I also like to watch movies to release stress.

3) As a future Doctor, the advice I would give to other students is that you are not the only person going through it. You will make it through like everyone else has and it will all be worth it in the end. Just focus on the final goal!

4) I think that students should be made aware of counselling services just in case they need them and they should be more open and visible so people are not scared of them or the stigma attached to approaching counselling.

### Naima Ragge, 1<sup>st</sup> year, MU-Pleven

1) Yes. Being in first year of medical school currently, I believe it is a very stressful year. Especially for people like me who have taken gap years, where you go from doing no studying to studying full-time, without having any time to get used to it. With medical school as well there is no transition period as there is with other degrees; you're literally thrown into the deep end and its survival of the fittest.



2) It's all about time management: mostly I try to do as much work as possible and then spend as much time as I can socialising, having fun not thinking about the next assignment or the next exam. You have to have that balance, otherwise it will be too much. I also go to the gym. Working-out helps me to de-stress. And just having a laugh with friends, people going through the same thing as you.

3) I would say time management. Do not spend all your time studying; however, don't spend all your time socialising either. Have that balance between the two and revise for two hours or so, every day, so come exam time you are recapping stuff and not literally starting from the beginning. There is a lot of self-studying in medical school so make sure you read ahead.

4) No additional comments

**Editor's Note: May I take the opportunity to wish every European medical student all the best for getting through medical school, as well as a fruitful outcome in the next set of examinations . . . Let us all work hard to be the successful generation of tomorrow's society.**

# Mind-Regeneration

## Are you getting enough sleep and 'brain-foods'?

Healthy lifestyle! Balanced diet! Moderate meals! We rarely turn on our television or pick up a newspaper these days without being confronted with yet another advert about health, but what level of importance do we give our health, particularly brain health?

When one is struggling to meet the numerous demands of the day, one can sometimes involuntarily cut down on sleep. Our busy daily schedule deprives us of the essential time one should give to sleep. Ironically, the quality of an individual's sleep directly affects the quality of their daily life, including their mental sharpness, productivity, emotional balance, creativity, physical vitality, and so much more.

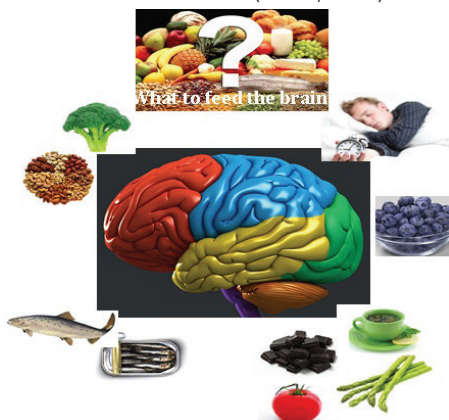
An ongoing research in Singapore shows how individuals who sleep the least exhibit the most rapid growth of the brain ventricles; this translates to faster aging. These changes in the brain, associated with cognitive decline and dementia, start many years earlier than previously thought (Xie & Kang, 2013). Researchers have also been able to prove that sleep-deprived people experience a decline in vascular function (Ratini, 2014). Some factors that can lead to sleep deprivation include smoking or drinking alcohol and excessive noise and light (Smith, et al. 2014).

These studies report that it is paramount that adults sleep for at least SEVEN hours a day to protect their brains as they age. In addition, it is not just the quantity of sleep that is important, but also the quality of sleep one gets (Nixon, 2009). Slow-wave sleep, colloquially known as deep sleep, is the time for recuperation of the mind-body system, the time to build up energy for the day ahead; at the same time, growth hormones are released to stimulate muscle repair, and glial cells, which form a part of the central nervous system, reinstate sugars to provide energy for the brain.

Just as sleeping patterns are important in improving brain function, so is nutrition. The brain, which makes up 2% of the body weight, utilizes roughly 20% of our daily calories. The ability to focus and concentrate comes from the continuous, adequate supply of glucose, which is primarily obtained from carbohydrates. If one adds the following smart foods to one's daily diet, one will increase the chances of having a healthy brain up to old age.

To live healthily, one should moderate food intake and enrich one's diet with anti-oxidant rich foods that will help regenerate brain matter, thus improving memory. Antioxidants bind with free radicals in the blood which attack and destroy brain cells, rendering them harmless. Good sources of these antioxidants include green tea, tomatoes, asparagus, and dark chocolate. Dark chocolate is known to intensify focus and concentration, and stimulate the production of endorphins that help the person feel positive (Sorgen, Lewin & Mercola, 2014).

A brain cell's structure consists of a lot of omega-3 fatty acids. Essential fatty acids (EFAs) are not produced by the body, therefore they have to be obtained from one's daily diet. These fatty acids have proved to be valuable in brain development, as well as in treating depression and other psychiatric disorders such as schizophrenia. Good sources of omega-3 fats are salmon and sardines (Lewin, 2014).



**Ritianne Buhagiar, 19,**  
*2<sup>nd</sup> Year Medical Student*  
*Faculty of Medicine & Surgery,*  
*University of Malta.*  
*(From Xewkija, Gozo)*

Research on blueberries has shown that this tasty fruit shields the brain from oxidative stress and may decrease the effects associated with age-related conditions such as dementia. Studies on aging rats have shown that blueberries significantly enhance both their learning capacity and motor skills, making them mentally equal to younger rats (Ferland, 2013).

Vitamins are vital nutrients needed by the brain to boost memory and focus whilst protecting against serious illnesses.

Vitamin K, predominantly found as MK-4 in the brain, has been proved to have a relationship with behavior and cognition. It is found in its highest concentration in the midbrain and pons medulla, and has been linked to alterations in the sphingo-lipid metabolism involved in ageing and neurodegenerative disorders such as Parkinson's disease (Ferland, 2013). Broccoli is a great source of vitamin K.

High levels of homocysteine are tied to cognitive decline, and an increased probability of suffering from Alzheimer's disease or stroke. Taking B vitamins is known to suppress homocysteine, thus slowing brain shrinkage. Folic acid is a synthetic type of B vitamin which when converted to its activated form is able to cross the blood-brain barrier and induce the brain benefits mentioned. Taking nuts and seeds as a dietary intake of vitamin E, an important antioxidant, also helps prevent neuronal degeneration, hence preserving brain function (Ferland, 2013).

If we all stop to think of how precious and short life is, everyone will start monitoring how much sleep they have, and engage themselves in a healthier lifestyle enriched with healthy nutrients.

### References

- Ferland G. (2013) Vitamin K and the Nervous System: An Overview of its Actions Retrieved from <http://advances.nutrition.org/content/3/2/204.full>
- Hagan D. & Hagan M. (2013). Cutting back on sleep harms blood vessel function and breathing control. Retrieved from <http://www.sciencedaily.com/releases/2013/04/130422102026.htm>
- Lewin J. (2014). 10 foods to boost your brainpower Retrieved from <http://www.bbcgoodfood.com/howto/guide/10-foods-boost-your-brainpower>
- Mercola J. (2015) Vitamin B May Protect Against Alzheimer's Say Researchers Retrieved from <http://articles.mercola.com/sites/articles/archive/2013/06/03/vitamin-b.aspx>
- Nixon R. (2009). Brain food: How to Eat Smart Retrieved from <http://www.livescience.com/3186-brain-food-eat-smart.html>
- Ratini M. (2014). Are You Getting Enough Sleep? Retrieved from <http://www.webmd.com/sleep-disorders/guide/sleep-requirements>
- Smith M. Robinson L. Segal R. (2014). How much Sleep do you need? Retrieved from <http://www.helpguide.org/articles/sleep/how-much-sleep-do-you-need.htm>
- Sorgen C. Eat Smart for a Healthier Brain Retrieved from <http://www.webmd.com/diet/features/eat-smart-healthier-brain>
- Xie I. Kang H. et al (2013) Sleep drives metabolite clearance from the adult brain. Bethesda: U.S. National Library of Medicine.



# The Kids are Sober

## How European Youth Turned Away from Drug Use



**Rok Hrzič, EMSA  
(Europe) Working  
Group on Lifestyle  
Medicine**

There was a time, when Allen Ginsberg - the famous American beatnik poet - felt the need to correct the record in the Paris review on his drug use. Not to deny it, but to explain that he revels in the use of LSD. A trend that fully continued into the present day, many other youth idols proudly encouraged the use of drugs, legal or illicit, over the years. We saw millions of young people taking this celebrity advice to heart, to the point where going to university became synonymous with drug experimentation. The efforts of health authorities to combat this trend, which often focused solely on intimidation, were often ineffective and sometimes served to add fuel to the fire by attaching an air of danger and rebelliousness to using drugs.

Interestingly, this image of widespread drug use is something that persists among students. A 2012 UK student survey found that university students consider drug use much more prevalent than it actually is. In fact, national and international drug watchdogs are increasingly finding that the use of drugs among youth is on the decline. There are certain exceptions to this trend, notably cannabis and prescription stimulant use, but the overall picture is becoming clear: the youth are increasingly choosing to steer clear of drugs.

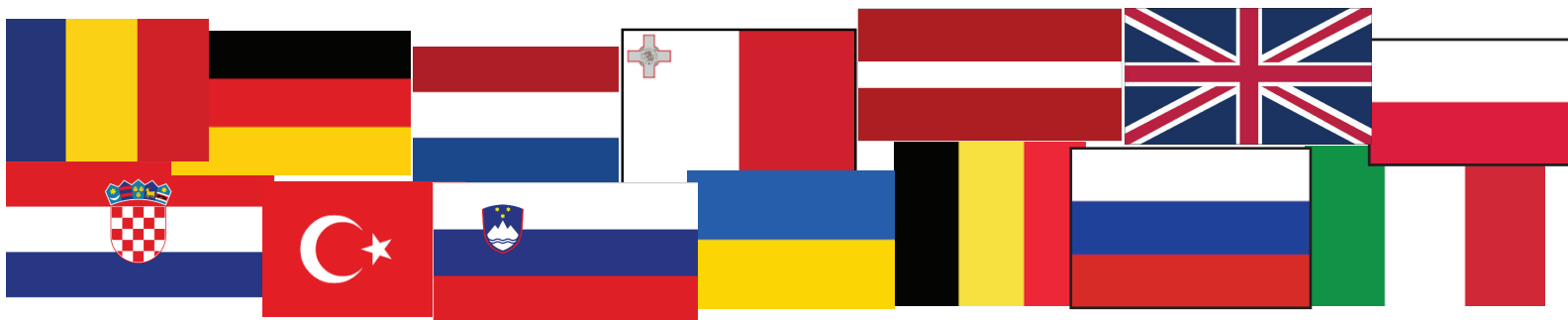
The reasons behind this trend are as of yet unclear, but speculation is high. As prevention programs focus on more holistic information instead of scare tactics, drugs may seem less mysterious and cool and more, a 'stupid thing to do'. Since the information is increasingly being provided by peers that educate instead of adults that forbid, there might be less sense in seeing drug use as a way to rebel and defy authority. It is a complex web of influence that we deal with here, one that we need to try and unravel in the future.

Despite these trends offering us some respite and hope for the future, the issue at large is still alarming. New synthetic compounds are gaining interest among Europeans, including youth. Prescribed stimulant use is increasingly being used in a practice termed 'academic doping' by students looking to gain an edge over the competition in an increasingly competitive academic environment. A 2013 Swiss study found that 8% students used one of the so called 'smart drugs' (excluding alcohol) in the months leading up to exams.

Clearly, drug use among youth is likely to never completely disappear. But we can still do more to make their use less appealing and less likely. The EMCDDA 2014 report includes evidence based prevention strategies: a selective approach that focuses on norm-setting, environmental restructuring, motivation, skills and decision-making. Student organizations can use this evidence to provide more effective peer education projects. We can lobby our governments to implement these findings in national drug prevention strategies. But perhaps the easiest, if not most effective, is to serve as a role model for your family, friends and colleagues.







# The Doctor/Patient Relationship & What's Up EMSA?



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# A Newer Generation

## The World Wide Web and Internet-Informed Patients

An apple a day keeps the doctor at bay, but who needs an apple when he's only a mouse click away?

With advances in technology, today's society has increasingly found new ways to avoid abandoning the comfort of its home and seeking to engage with others as well as making use of services through different web portals. But should this web of information also include health or should it remain taboo?

Information about health has become one of the most sought after topics on the internet, leading to a change which sees the patient moving from being a passive recipient with a presenting complaint to an active consumer in the health industry presenting with a differential diagnosis.

Patients often test and generate hypotheses about their health or medication and integrate it with advice they would have received from their peers, sometimes tending to draw the wrong conclusions.

Is the use of the internet by our patients interfering with our management? Is it encouraging them to ask second opinions and doubt our diagnosis?

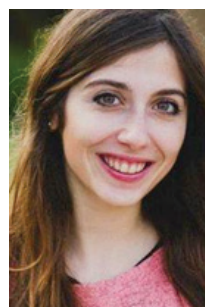
Despite the negative feedback surrounding the increase in internet-informed patients, some statistics have shown that many have admitted that the internet has influenced their decision-making process in such a way that it has improved their communication with their general practitioner, whilst still viewing him or her as their primary source of information (Sillence, et al., 2007).

Qualitative studies have shown that patients often seek medical information in two types of situations:

1. When they fall ill or feel a symptom, in order to identify whether they can manage this on their own or require a medical professional;
2. After a clinical session with their doctor in order to either confirm knowledge they would have received or research further information because of their dissatisfaction with the outcome of the appointment (McMullan, 2006).

Supporting this theory, some results identified a number of physicians who view internet-informed patients as a challenge, with another group believing that it has a beneficial effect on the doctor-patient relationship (Ahmad, et al, 2006). The latter choose to approach the patient and ask them whether they would have researched their symptoms online and after analysing what they would have found, the patient would be led towards seeking information from reliable websites (McMullan, 2006).

It is of great importance that medical professionals do not view the internet as a threat but understand that their patients have a thirst for knowledge, especially where their health is concerned. Seeking to engage the misinformed patient in open discussion is an important element in the consultation process. It would thoroughly ensure that the patient is indeed an equal player in their therapeutic management, whilst the doctor would better understand their concerns.



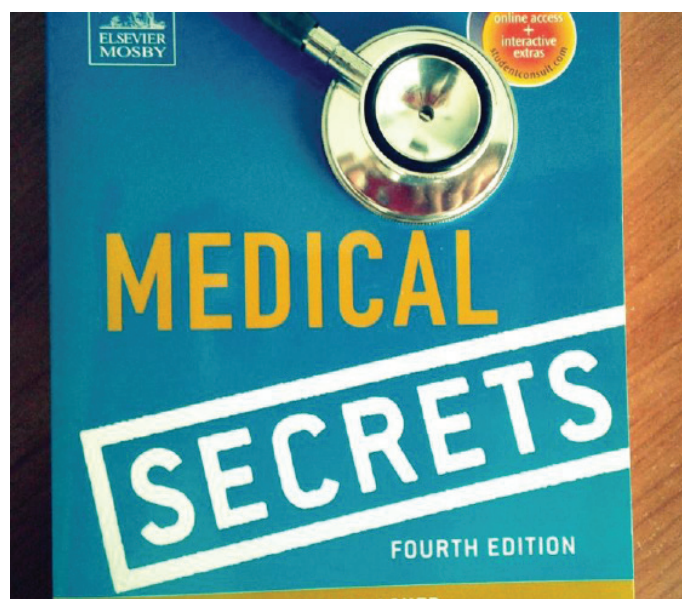
**Elizabeth Gialanze**, 23  
5<sup>th</sup> Year Medical Student,  
Faculty of Medicine & Surgery,  
University of Malta.  
(From St. Paul's Bay, Malta)

Unfortunately sometimes doctors do not advocate disease prevention as strongly as they should within their clinics (Pace, et al., 2014), thus health and the internet should also go hand in hand when it comes to targeting the public audience. E-health is an evolving field in the intersection between public health and technology (Eysenbach, 2001) and an effort should be made to harness the benefits between linking health promotion to the use of the internet, taking advantage of the increase in our internet-informed patients.

After all, we can't be our own Dr. House.

### References

- Ahmad F. et al, (2006). Are Physicians Ready for Patients With Internet-Based Health Information. *Journal of Medical Internet Research*. 8 (3)
- Eysenbach G., (2001). What is e-health? *Journal of Medical Internet Research*. 3 (2): e20
- L. Pace, M. Sammut and C. Gauci, (2014). The attitudes, knowledge and practices of Maltese family doctors in disease prevention and health promotion. *Malta Medical Journal*. 26 (4), pp.2-7
- McMullan M., (2006). Patients using the Internet to obtain health information: How this affects the patient-health professional relationship. *Patient Education and Counseling*. 63 (1-2), pp.24-28
- Sillence E. et al., (2007). How do patients evaluate and make use of online health information. *Social Science and Medicine*. 64 pp.1853-1862





# It is Easy to Forget, but as Doctors We Will Be Treating Individuals Not Medical Conditions!



**Elena Farrugia**, 19,  
3<sup>rd</sup> year medical student,  
Faculty of Medicine & Surgery,  
University of Malta.  
(From Kercem, Gozo)

I see the title of this article as the result of an argument where one side passionately states that the patient is the number one priority and nothing should stand in the way of this, while the other side says with equal enthusiasm that this is extreme idealism. From what I can gather during my attachments at the hospital is that doctors, for the most part, are in the middle ground. However, is this balance enough? Then there are doctors who cannot even reach this balance and just treat the patients as the diseases they read so much about in their studies. Nevertheless I am not here to judge but to try to understand and offer possible solutions.

Medical school emphasises that it is important to acknowledge the patient's emotions, empathise and treat them with respect. So it is really surprising that sometimes when a patient cries during the ward round the consultants dish out benzodiazepines with a sigh of confused exasperation while the rest of the team continues working and the medical students are left stunned. I feel especially astonished when I actually understand why the patient is feeling the way s/he is. A girl of only 20 years of age understands while an older man or woman with more life experience just does not seem to. Am I neurotic or are they just not getting it? I also see very talented physicians doing their jobs so efficiently that they bounce from one patient to the next only asking questions that are relevant to the treatment. Are these the role models that I should follow? I am aware that there is a massive workload to be done and that if you give some people the chance they never shut up, so I understand the practical necessity of it all but we need to remember that efficiency is

not everything. An extra few minutes to be polite and actually listen to the patient may only result in getting back home at three instead of two in the afternoon so not a lot is really going to be lost. Moreover distributing the work to a few extra doctors would also alleviate the situation. There are plenty of medical students willing to work. Furthermore, the presence of psychiatrists and psychologists would also help. This extra help would not only improve the treatment of the patient's psyche but even treatment as a whole as more time is dedicated to the case.

Speaking from experience, medicine pushes one to his or her limits on virtually every level. Modern medicine is an abundance of knowledge which is always being updated and there are numerous techniques which one needs to learn. While this is part of what makes medicine so exciting it can also make it difficult to handle. Therefore it is not so much of a shock when some people do not dedicate as much time to the emotional aspect of the profession. The treatment of patients as diseases may result from either the doctor not being sensitive enough, or because s/he is overly sensitive. I think the former is difficult to deal with as I believe empathy is something you have to learn for yourself. The other is also difficult since the psychological scars of seeing so much suffering is difficult to treat as well. Support must be given to both these types of individuals but it is easier said than done. In my opinion the balance I mentioned before may be enough after all.







# Rolling Out the Red Carpet

Winners of the Nobel Prize in Physiology or Medicine over the last 25 years!

Year of Award	Name of Winner	Reason for Award
1989	J. Michael Bishop & Harold E. Varmus	For their discovery of the cellular origin of retroviral oncogenes
1990	Joseph E. Murray & E. Donnall Thomas	For their discovery regarding organ and cell transplantation in the treatment of human disease
1991	Erwin Neher & Bert Sakmann	For their discovery regarding the function of single ion channels in cells
1992	Edmond H. Fischer & Edwin G. Krebs	For their discovery regarding reversible protein phosphorylation as a biological regulatory mechanism
1993	Richard J. Roberts & Phillip A. Sharp	For their discovery of split genes
1994	Alfred G. Gilman & Martin Rodbell	For their discovery of G-proteins and the role of these proteins in signal transduction in cells
1995	Edward B. Lewis, Christiane Nusslein-Volhard & Eric F. Wieschaus	For their discovery regarding genetic control of early embryonic development
1996	Peter C. Doherty & Rolf M. Zinkernagel	For their discovery regarding the specificity of cell mediated immune system
1997	Stanley B. Prusiner	For the discovery of Prions
1998	Robert F. Furchgott, Louis J. Ignarro & Ferid Murad	For their discovery concerning nitric oxide as a signalling molecule in the cardiovascular system
1999	Gunter Blobel	For the discovery that proteins have intrinsic signals that determine their transport and localisation in the cell
2000	Arvid Carlsson	For the discoveries concerning signal transduction in the nervous system
2001	Leland H. Hartwell, Tim Hunt & John E. Sulston	For their discovery of key regulators of the cell cycle
2002	Sydney Brenner, H. Robert Horvitz & John E. Sulston	For their discovery regarding genetic regulation of organ development and programmed cell death
2003	Paul C. Lauterbur & Sir Peter Mansfield	For their discovery of magnetic resonance imaging
2004	Richard Axel & Linda B. Buck	For their discovery of odorant receptors and the organisation of the olfactory system
2005	Barry J. Marshall & J. Robin Warren	For their discovery of Helicobacter bacterium and its role in gastritis and peptic ulcer disease
2006	Andrew Z. Fire & Craig C. Mello	For their discovery on RNA interference and gene silencing by double-stranded DNA
2007	Mario R. Capecchio, Sir Martin J Evans & Oliver Smithies	For their discovery on the principles for introducing specific gene modifications in mice by the use of embryonic stem cells
2008	Haral Zur Hausen, Francois Barre-Sinoussi & Luc Montagnier	For their discovery of the human papilloma virus causing cervical cancer as well as the human immunodeficiency virus
2009	Elizabeth H. Blackburn, Carol W. Greider & Jack W. Szostak	For their discovery of how chromosomes are protected by telomeres and the enzyme telomerase
2010	Robert G. Edwards	For the development of in vitro fertilisations
2011	Bruce A. Beutler & Jules A. Hoffmann	For their discovery regarding the activation of innate immunity, as well as the discovery of the dendritic cell and its role in adaptive immunity
2012	Sir John B. Gurdon & Shinya Yamanaka	For their discovery that mature cells can be programmed to be pluripotent
2013	James E. Rothman, Randy W. Schekman & Thomas C. Sudhof	For their discovery on machinery regulating vesicle traffic which is a major transport system in our cells
2014	John O'Keefe, May-Britt Moser & Edvard I. Moser	For their discoveries of cells that constitute a positioning system in the brain

# StudyPortals - Discover your Study Opportunities!

Did you know that you can study for free in Sweden? And that it is possible to study Medicine in English in, for instance, Poland or Turkey? And that there is €16 billion (!) in scholarships available to study in Europe alone? Now you do. Read on and be surprised by the great study opportunities that the world has to offer, with thanks to the people at StudyPortals - the international study choice platform.

Did you know that you can study for free in Sweden? And that it is possible to study Medicine in English in, for instance, Poland or Turkey? And that there is €16 billion (!) in scholarships available to study in Europe alone? Now you do. Read on and be surprised by the great study opportunities that the world has to offer, with thanks to the people at StudyPortals - the international study choice platform. The team of StudyPortals does its best to stimulate and inform you on (inter)national study choice on [www.studyportals.eu](http://www.studyportals.eu). On several portals you can find relevant information about study programmes related to Life Sciences, Medicine and Health, as well as information about funding opportunities. In addition, you have a great chance to learn from other students and the experiences they have shared on the Student Experience Exchange platform.

## How is it done?

Every day, almost 100,000 students visit the StudyPortals platforms. That's over 3 million per month! This is because on StudyPortals.eu you can find and compare more than 45,000 study opportunities. You easily search amongst all these programmes and narrow them down to just a handful that are of interest to you.

Each program is presented in the same way, it has a short description, information about the tuition fees, duration and other university related information. Furthermore, you will find all details related to the study programmes: application requirements, contents, application deadlines, start dates, mode etc. But StudyPortals doesn't stop there. To keep up with the reality of student life, contacts with Student Associations such as EMSA are nurtured and students form an integral part of the StudyPortals Team. Therefore, StudyPortals knows that there is more to studying than just finding a programme that suits you.

## Finance your studies

Of course you need to finance your studies somehow. Guess what?! You can find all scholarship related information on StudyPortals as well; just check [ScholarshipPortal.eu](http://ScholarshipPortal.eu). There are more than € 16 billion available for scholarships every year - for studying, working or performing research. Just select where you come from, where you want to go, what you want to study, and hit Search!

## Read and share study experiences

The best way to get to know the university, city, or social life where are you heading to is through first-hand experience

## Sissy Böttcher and Madalina Gavrila, Study Portals

and real life stories. On STeXX.eu, the Student Experience Exchange platform you can find all the relevant information that the university cannot tell you about. How is the food in the canteen? Are people in your country of destination warm or cold? What does the nightlife in the city look like? How expensive are apartments? ...

You can also be a part of this fast growing social platform. This is a great opportunity to share your study experience and student stories. Here, you can write something about your study experience; it only takes 5 minutes. You can review any university: in your own country, or you can write about your international exchange programme. And don't forget to select that you belong to EMSA!

## Discover your international opportunities today!

Are you now encouraged enough to discover the opportunities waiting for you worldwide? Just check out the following links to find all there is to know for medical students ready to make their dreams come true:

- Find 700+ Bachelors programmes in Life Sciences, Medicine and Health worldwide: [BachelorsPortal.eu](http://BachelorsPortal.eu)
- Find 2800+ Masters programmes in Life Sciences, Medicine and Health worldwide: [MastersPortal.eu](http://MastersPortal.eu)
- Find 400+ PhD programmes in Life Sciences, Medicine and Health worldwide: [PhDportal.eu](http://PhDportal.eu)
- Find 480+ summer/winter schools, trainings, etc. in Life Sciences, Medicine and Health worldwide: [ShortCoursesPortal.eu](http://ShortCoursesPortal.eu)
- Find 700+ open and distance learning opportunities in Life Sciences, Medicine and Health worldwide: [Distance-LearningPortal.eu](http://Distance-LearningPortal.eu)
- Find 140+ scholarships, grants, awards, available for Life Sciences, Medicine and Health students: [ScholarshipPortal.eu](http://ScholarshipPortal.eu)
- Find 1800+ language classes and schools worldwide: [LanguageLearningPortal.com](http://LanguageLearningPortal.com)
- Screen 73000+ study reviews of study experiences abroad: [stexx.eu](http://stexx.eu)



Submitted by **Ifunanya Ejidike**, EMSA European Institutions Liaison Officer 2014/2015, on behalf of EMSA partner - Study Portals.

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**studyportals**  
taking you further

# Confessions of a Student Exchange

## EMSA Europe at the 17th Summer School on Tropical Medicine and Infectious Diseases (Ismailia, Egypt)

Members of EMSA Europe were invited to represent our association during the event organized by the Suez Canal Medical Students' Association (SCMSA) between the 4th and 17th of August, 2014.

This trip turned out to be a fairy-tale adventure, with clinical medicine experienced to the fullest, exploring different places in Egypt whilst being touched by the mesmerizing Arabic culture, and trying the famous mangoes from Ismailia...the best in the world, apparently!

The balance between clinical and cultural elements of the summer school programme have been very well managed, with theoretical lectures well complemented by direct contact with patients on a daily basis. The tutors from SCMSA, most of which were final year medical students or freshly graduated doctors, transferred their knowledge in a way which allowed all participants to retain what is most useful to them, without forgetting that we are students on holiday after all! Each afternoon there was a different piece of Egypt to be discovered, ranging from beaches, historic monuments, marvelous deserts, glorious mountains and we can't forget the famous Giza pyramids.

In my opinion, this Summer School constitutes a fabulous way of combining a passion for medicine, travelling and the opportunity to come across numerous great people that share similar interests to yours.

Dearest medical students, make sure you don't miss out on the opportunity to apply for the 18th Summer School. The EMSA Europe networks are out there to spread the word! :)



**Olga Rostkowska, MD, Immediate Past EMSA President (2013/2014) from Warsaw, Poland**

## My General Surgery Exchange in Wroclow, Poland

This summer I was lucky enough to be offered the opportunity to go on a one month exchange to one of the most beautiful cities I have yet to visit:- Wroclow, Poland.

To be completely honest, it wasn't my first choice and as the date to set off on this exchange got closer, I grew apprehensive about spending a whole month in a country I knew so little about. Looking back now, a month wasn't nearly enough and I have learnt not to be afraid of traveling to unfamiliar countries - they may be highly underestimated!

I lived in a dorm in a room with 2 other girls:- we, along with another fifty or so students, shared the same floor, kitchen, bathroom and washing machine. Besides having to strategically plan showers, washing my clothes and cooking dinner, I loved the experience of living with such a vast group of students from all over the world. The people with whom you are on exchange, will determine what kind of experience you will have. I was lucky enough to have an incredible group of people to spend the time with.

The rotation I was accepted for was general surgery. I will vividly remember this rotation, for it was one of the first times I had observed surgeries, as well as scrubbed-in and assisted. For a student who had just finished the pre-clinical years, this was an exciting opportunity, so even if you haven't started clinical years, it's still a valuable experience.

Besides learning academics and how different hospitals work, I think it's very important to enjoy yourself and make the most of your time in a different country. Explore, meet new people and make time to go out:- this will be an adventure you will always remember.

To anyone considering going on exchange: I highly encourage you to do so, even more to somewhere you wouldn't normally go. Some small advice I would also offer:- Apply for an International student identity card (ISIC) before going, download google maps, buy a local SIM card as soon as you arrive and see as much of the country as possible! I would also highly recommend Poland to anyone interested:- it's beautiful, cheap, full of culture and its people are exceptionally friendly!



**Rebecca Stoner, 20, 3<sup>rd</sup> year medical student, Faculty of Medicine & Surgery, University of Malta. (From Mellieha, Malta)**

## Professional Exchange in the University of Freiburg, Germany...The heart of the Black Forest!

It was around March last year that I was informed that I was accepted to take part in a professional exchange experience in Germany. I must admit that at first I wasn't particularly pleased as I intended to go on an exchange to party and meet new people rather than go to a place where I have to abide by constant strict rules...but I might have been misled by the typical German stereotype there. After checking the negative reviews on both the placement and the

social programme given by some Maltese students in the previous years, my enthusiasm hit another low...but I might have been misled there too.

I spent quite a few hours on the IFMSA Wiki page in order to make a shortlist of places that would fulfil my extensive needs and was already convinced Freiburg should be my number one choice. To add to that, they were the only organisational committee (OC) that replied to my e-mail and thus the choice became a no brainer.

Prior to going there, the reasons why I chose Freiburg were that it was cheap; it was a student city and there was an abundance of nature. After being there I can also include the easy travelling, amazing teaching hospital and a lifestyle which you really can't explain in words.

My advice to anyone would be to put Germany as one of their top choices as they take their teaching very seriously. Unless you speak German (which I don't by the way) your choice of specialities is limited to surgery, but you will learn a lot as you are actually given responsibilities which you won't have until you're a House Officer...if you're a budding surgeon allow me to convince you by making it clear that you will be expected to scrub in as opposed to just stare in theatre.

I must admit that the first week of my experience was not particularly delightful as the consultant I was attached to didn't appreciate that I didn't speak German and I was also a bit too shy. However, as soon as I started taking initiative to help out I was quickly integrated as part of the team and for the first time I felt that I was giving something back to the hospital and not just being a student.

Most of the locals at the time were busy with exams or were on exchange themselves, however this did not stop them from organising an activity at least once a week. Despite this, there are still loads of things to do in Freiburg. It would be a total waste if you went there and did not embark on biking adventures, long hikes in the Black Forest and swimming in lakes - most of which are less than 45 minutes away from the city centre. Speaking of the city centre, you can always spend your evenings relaxing in one of the numerous beer gardens over there. They are mainly populated by students attending the University of Freiburg and there is always a calm and nice atmosphere.

In conclusion, one thing to watch out for are the canals around the city centre. Legend says that if you step into them while water is running through you'll have to marry someone from Freiburg, so make sure to take your time to test the waters before actually putting your foot in them (pun intended).



**Andrew Michael Dimech, 24, 5<sup>th</sup> year Medical Student at the Faculty of Medicine & Surgery, University of Malta.**

## EMSA Dubrovnik Summer School of Emergency Medicine

The EMSA Dubrovnik Summer School is one of the best European summer schools on emergency medicine which has been held for the past eleven years in Croatia, in late July or early August. Each year the school gathers around forty medical students from all around the world with the aim of learning new skills and rehearsing the old ones in the field of emergency medicine.

The course lasts one week and consists of lectures, interactive seminars and exercises given by respect-able Doctors and Professors from Croatia, Europe and the USA. Some of the topics covered include; traumatic brain injury, paediatric and adult basic life support, automatic external defibrillation, as well as basic surgical skills such as endotracheal intubation. Participants are also required to take an exam, in order to receive an internationally recognized intermediate life support certificate during the Gala night.

In addition to the professional part of the program there is also a social component. This includes various sightseeing trips to touristic sites in Dubrovnik, as well as surrounding cities which further enrich the experience of the project. Previous participants of this summer school have praised the guided city tours to Lokrum and Lopud, the boat rides to Cavtat, as well as the visit to Dubrovnik Summer Festival.

We certainly recommend you to make the most of next summer by visiting Croatia and the Adriatic Coast. Apart from their natural beauty, these places certainly offer a number of scientific, cultural and leisure facilities. For more information regarding this year's summer school, kindly visit the official Facebook page, or log on to: [www.dubrovniksummerschool.com](http://www.dubrovniksummerschool.com)



**Georgiana Farrugia, 24, Diagnostic radiographer & 2<sup>nd</sup> year medical student, Faculty of Medicine & Surgery, University of Malta. (From Marsaskala, Malta)**





# EMSA EVENTS & PROJECTS

## Medical Education Week

HEART stands for **H**ealthcare, **E**ducation and **R**esearch **T**alks and is a concept developed by the EMSA team in Cluj-Napoca and is inspired by the TEDMED events from the USA. It aims to give a chance and setting to local professors and students to present their achievements in the field of medical practice and research, whilst packing a great deal of inspiration in their talks. All this in favour of our continuous attempt to foster innovation in medicine. The best part of HEART is that the talks are streamed live to partner universities, so that as many people as possible get a chance to benefit from them!

Since 2014 we've been trying to inspire medical students from the EMSA family. Having started with the very first edition of HEART in April 2014, we had a beautiful array of talks from speakers both local and international, from fields like neurosciences, oncology, haematology and medical research. HEART was streamed live at EMSA CSMU and EMSA Bucharest.

This year we focused on the hot topic of interprofessional collaboration, having gathered speakers from a large range of fields; oncology, computer sciences, biomaterials, personalized medicine and nanomedicine. By these means, we sought to see how innovation arises from linking medicine to engineering and computer sciences for the benefit of individual participants and the medical field as a whole.

Check us out on:  
facebook.com/HEART.Cluj  
www.heart.osmcluj.com



Have you ever heard about this magical project that involves medical students from all across Europe to take an active role in their own medical education? Do you know that through this project you would have a real chance to gain some practical skills and see yourself as a future doctor and teacher?

It has been a while since this project has been launched in EMSA and inevitably it has gained significant popularity among our FMOs. Not only does it give medical students the opportunity to explore extra-curricular topics, but it also creates a real chance for everyone to try and deliver a session or workshop by themselves. In a very simple project, through a variety of interactive tools, students can develop their communication skills, presentation skills and why not leadership skills. It will help both the organizers and participants to start looking at their education from a different angle. It is just an example of how we as students can contribute and help the evolution of our own educational system.

Now wondering how to start a Medical Education Week in your faculty? Join our team and meet with colleagues from all around Europe, who would love to share their experiences and tips for a very successful project.



## European parliament panel debate in Brussels

*"Interprofessional collaboration - Challenging Barriers"*

If you have always wanted to make a change for the better in someone's life, whether it is a child or an elderly person, the projects belonging to the European Integration pillar will surely appeal to this desire.

**Best Buddy** project is a heart-warming project which started from the idea that every child needs a best buddy, someone in which they can confide and rely on, especially when times are tough. So it is even more important for a child coming from a difficult background or for a child with disabilities to establish friendships. This is where we, as medical students, come in; a couple of hours a week spent with a child in need, helping with homework or playing games will be invaluable in his future development. So take advantage of the opportunity to influence a little one and introduce this project in your FMO.

**Different Christmas** is, some would say, a variation of the Best Buddy project, only that this time it's focus is not on children, but on the elderly. The idea is to keep them company and make them smile in one of the most important days of the year: Christmas. But this does not have to keep you from stopping by the homes for the elderly even without a special occasion. Kind gestures are kind no matter the day of the year!



Monday 23rd February was a big day for EMSA as it marked the first panel debate in hopefully a series of more to come. As one of the most discussed topics in 2015 is interprofessional collaboration, we thought it only fair to address this subject as well; the sooner students learn to embrace and introduce this concept as a must-have for their practice, the better it is for everyone involved, whether we are students in medicine, pharmacy, dentistry or nursery. This is especially important for the person at the center of our activity: the patient.

As the topic was about interprofessional collaboration, it seemed only fair that the guest speakers present reflected this as well, as we wanted multiple points of view of the same issue:

- Nina Brandelet - Bernot, Head of Office of the Council of European Dentists
- Birgit Beger, Secretary General of the Standing Committee of European Doctors
- Paul de Raeve, Secretary General of the European Federation of Nurses
- John Chave, Secretary General of the Pharmaceutical Group of the European Union

It was really pleasant to see, at the end of all the speeches, the involvement of the attending students and the great number of questions asked, too many to fit in such a short timeframe. But this just goes on to prove once again the interest of all parties in collaboration and that it was just the perfect incentive that sparked the idea of more debates like this.

We would like to thank again the speakers who so kindly accepted our invitation, the United Nations house for having us there and our alumni who helped us in making it all possible!

But for me, as an EEB boardie, that weekend in Brussels meant even more than just a successful debate. It meant another opportunity to see my fellow board members, to brainstorm on how to make EMSA an even better organization, to discuss all the projects we have in mind, but it also meant some good teambuilding time, be it while visiting Brussels or just while eating dinner. It not only was an opportunity to see old friends but to also meet new people, to discuss with our EMSA about what they want from EMSA as an association and what they love about us, and to create new friendships that will hopefully last long.  
Daria Gheorghe - EMSA (Europe) European Integration Director

# Introducing the EMSA Working Group for Lifestyle Medicine & The EMSA Lifecycle Project

**Ibukun Adepoju** on behalf of the **EMSA (Europe) WG on Lifestyle Medicine**



The EMSA Working Group for Lifestyle Medicine is the outcome of a series of brain-storming sessions that led to our first online meeting in June 2014.

The aim of this project is to create a comprehensive and interconnected network of projects in the field of healthy lifestyle, focusing on lifelong healthy habits and disease prevention (as opposed to clinical treatment and rehabilitation). The team of five decided that we would have all our actions under a single umbrella which we call the EMSA LifeCycle Project.

Apart from our project focus, we are also partnership focused. On this basis, the WG actively and directly works with the European Society of Lifestyle Medicine (ESLM) which signed a collaboration agreement with EMSA in April 2014.

Currently, we have developed 5 sub-projects:

**BrainMed:** Our brain is what we think with; and what we think is who we are or at least, who we think we are. Yet, we take it for granted and rarely think about its wellbeing; we push it to the limit in every way possible and then wonder why we sometimes feel we are "losing it." While physical health and beauty are high up on the priority list in the world today, mental wellbeing is a foreign concept even to a large number of healthcare professionals. The BrainMed project will involve a series of lectures/workshops/webinars on mental fitness and agility and aims to get future health professionals to re-think how we think.

**EMSA MedCooks:** Medical students are future healthcare professionals and public health leaders. However, due to the nature and demands of their studies, many lean towards unhealthy eating habits. The idea behind the project is to show medical students that you can eat healthy and tasty food, without compromising on study time and also within a friendly budget. We have a strong belief that most habits acquired during studies become entrenched in the lifestyle of future doctors. "A healthy population starts with a healthy medical student. But first comes coaching!"

**EMSA M'powers Me:** There are a large number of medical students who desire to become actively involved with lobbying, advocacy and awareness raising, but find the initial learning curve too daunting or at least too time consuming. These skills are unfortunately not addressed in the formal medical curriculum. The aim of this project is to empower individuals by generating content on an online open source portal. It will host multimedia such as instructional videos, project handbooks, as well as primary strategic and political documents. The creation of individual profiles for users will support individualised growth in knowledge and skills, and give life to the social aspect of the platform.

**STEP UP! EUROPE:** Up to 50% of the European population is overweight or obese (both leading risk for chronic diseases such as cardiovascular disease, type 2 diabetes, hypertension, coronary heart disease and certain cancers). The aim of this project is to create and subsequently expand a movement across Europe encouraging and motivating people to 'Step Up' and become more active by aiming to take at least 10,000 steps daily.

**BE My Little Doctor.** The aim of this project is to build up a team of medical buddies that follow up on elderly patients after their visits to the doctor. By building direct personal relationships, these healthcare students check up on their buddies to make sure they are following the recommendations to stick to healthier choices and keep active even in old age. Remember what they say about old habits dying hard?

Now, meet the hearts of the team:



**Tin Knezevic** is a student of medicine and an active volunteer. His love for complex systems brought him to medicine where he is trying to focus on health rather than disease. After working in many different fields, he finds his passion in psychology, health education and healthcare systems. Which is why alongside his medical books on his desk, you will find those from other areas such as sociology, economics and philosophy. In his eyes health is a term broader than medicine.

**Rok Hrzič** was born in Maribor, Slovenia, where he attends the Faculty of Medicine at the University of Maribor. He has served in EMSA's board member for the last two years as the Public Health Director. Since entering the university, he has been an active student representative, having served on various faculty and student bodies. Currently, he holds the office of the Vice-rector for student affairs. He is also the Co-Founder and Director of the EDUS foundation, a foundation for the opportunity of youth, which aims to tackle the rising graduate unemployment on the local level.



**Melike Pelin Özdoğan** is a 4th year medical student who is pretty excited about transitioning from three years spent reading in the library to finally communicating with patients since she really cares about interaction with people. Her passion in medicine comes from the idea of being able to help people stay healthy by raising their awareness while managing their diseases.



Besides her studies, she is an international soft skills trainer where she is developing her skills on leadership, team work and communication.

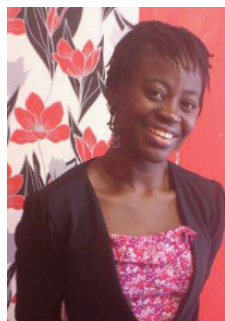
**Lukasz Filipiski** is a graduating student of Dietetics and is immediately starting his Medical studies at Medical University of Łódź.

Food freak, amateur cook and public health enthusiast, Lukasz is always eager to try out new recipes.

He loves taking photos and developing his videography and design skills.



**Ibukun Adepoju** is a global health student who is passionate about re-imagining healthy communities as well as her work in EMSA as Vice President External Affairs. She is a soft skills trainer who loves to think-outside-the-box in her work and life.



With an MD, a BA in Community & Health Psychology and now pursuing a Masters in Global health, Ibukun considers herself a dynamic rare mix of introvert and extrovert. In her free time when she is not contemplating how to solve international and local problems or mentoring other students, she is playing Pac man.

If you would like more information about any of these projects or about the work of the lifestyle WG, feel free to contact us at [emsalifestylewg@googlegroups.com](mailto:emsalifestylewg@googlegroups.com)



## Mission Possible

### Gauthier Desuter

*EMSA Treasurer 1991-1992*

Being the first treasurer of the organization, my EMSA involvement taught me very early how to set up an organization, how to finance it, and how to make it grow. The challenge was huge. Someone once said to me that launching a student organization that would survive and thrive was a "mission impossible". Well, we did succeed, and succeed thanks to the efforts of numerous medical students over the years. That made me feel good and gave me a lot of self-confidence that helped me a lot during the multiple downs and set-backs of my later academic career.



EMSA also made me also more open to the non-medical professions working in our settings, it pushed me to pursue, later on, management and health care policy studies in Brussels and Cambridge, Massachusetts.

EMSA made of me an involved professional rather than a concerned one. You have some difficulties to make the difference.... Well, keep this in mind; it is like the "Bacon & eggs breakfast"... the chicken is concerned about it, while the pig...is involved in it ;-)

Long live EMSA!

you hold deep inside of you. That's a way to feel at home. I am so grateful for this experience.

The courage gained through being challenged to take responsibility and contribute and grow - this all has carried me a long way that would take too long to describe here. As you might now be looking forward creating your own "dots", you very well know that taking risks and being honest to yourself is scary sometimes, needs incredible courage. Let me assure you, it's possible. And it is worth it. It is the same courage you need to touch other people's lives.

--M.B., [www.healing-souls.org](http://www.healing-souls.org)

## Hope - or why EMSA matters!

### Nick K. Schneider

*EMSA President 2000-2001*

In February 2000, I had the privilege of joining my first NCM in Slovenia. It was snowing and the meeting venue overlooked a frozen lake. It was a short-trip, I was actually en-route to the IFMSA-GA in Finland - ready for my first EMSA/IFMSA-Winter adventure! Like today, it was a turmoiled time. New European states emerged and the Kosovo war was not long ago. Students from Croatia and Serbia independently told me that they had all lost family members and friends in the earlier war. Knowing delegations from the other countries were present, they would not have attended the meeting, if it wasn't for the European idea. The hope of once joining the EU, an entity built to bring peace to Europe, made them overcome their personal sorrow, suffering and grief. That day, I realized that even the smallest European network matters. The hope for peace in Europe once united us, let's keep it that way!



## Courageous 'Dots'

### Matthias Behrends

*EMSA Medical Ethics Director 2005-2006*

Steve Jobs once said to Stanford graduates: "Believing that the dots will connect down the road will give you the confidence to follow your heart." For me, EMSA is one of these dots. In fact, rather many. My time with and within EMSA has been about the people I had the privilege to encounter. In a surrounding that we ourselves could shape, in which I could thrive - both personally and professionally.



I joined EMSA during a time of my medical studies when I was disillusioned and frustrated by medical education. I was constantly wondering if I was wrong or the others, as most fellow students could not understand that I was - among other things - suffering from lacking contact to patients. And I doubted myself. Looking back it seems to me like I was saved by a community of fellow students from all across Europe and the world who wanted more. Who were not satisfied with the status quo. Who wanted to experience more, express more, say more, do more.

Taking responsibility for your education in your own hands was a motto I lived up to my entire life. Hence, I felt in good company and found out that I should not have doubted myself. People are different. Search those who see and nourish the talents

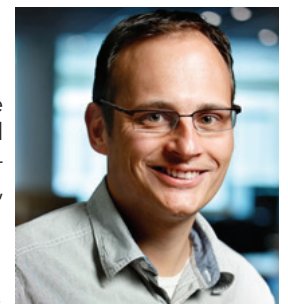
## Together

### Jacco Veldhuyzen

*EMSA President 1996-1997*

I am from Europe!

It was August 1997. I attended the General Assembly of another medical students organisation as EMSA President. During the opening ceremony, all participants were asked to stand up, say their name and country. When it was my turn, I stood up and said, "I am Jacco and I am from Europe!" I received a great and warm applause from the other participants. The rest of the meeting, people knew what I stood for: Europe. EMSA taught me that as medical students and doctors in Europe we have more in common than that we differ. EMSA helps to connect us. During my time in EMSA, I travelled to many parts of Europe and always experienced hospitality and friendship. It taught me to be open minded and collaborate. So Europe for me is not just a region, it is about a shared history and shared values. Together as Europeans we can achieve more than from our city or country alone. EMSA has shown that!





## My time in EMSA

## I love EMSA forever

### Sofia Ribeiro

*EMSA Vice President of External Affairs, 2011-2013*



It is hard to imagine how my life would have turned out without EMSA. Since my first General Assembly in 2009, when I was a 5th year medical student, a lot has changed. Though I knew for a long time that my professional path would not necessarily be in a hospital, few alternative options emerged. Then, on that GA, I met motivated medical students interested in issues such as European Integration, Public Health, research...and something changed forever. Despite being overwhelmed with so much new information, I was truly inspired by all those amazing people, by the international environment and by the willingness to influence processes at European level.

I started as an assistant to the European Integration Director, and next year became the European Integration Director, then Vice President for External Affairs for two mandates and finally Advisory Board Member. I had the privilege to represent EMSA in several international meetings and working groups over the last years. I am not able to quantify how much I have gained from it as a professional and as a person. European Public Health Policy started to be a familiar issue to me, and the word "friends" had not a European meaning. There were times in which I travelled so much that the expression "home is where my bag is" became a temporary reality.

When I had to choose my specialization, Public Health came as the obvious choice. The future is still uncertain, however there are a few things I take for granted: I wish to work in an international environment, dealing with issues in European Public Health, and meet fellow Alumni and EMSAi regularly.

### Olga Rostkowska

*EMSA President 2013/2014*

EMSA accompanied me for most of my university years, which perhaps is the most critical period in one's life. For sure it was in mine. During this time, nowhere else but in this Association have I seen so many human struggles, outbursts of enthusiasm, genuine appreciation but also personal dilemmas which had huge impact on the human characters involved. Those feelings grew more intense for me on becoming an Officer at the CPME in Brussels (first real job!) and got into their culmination with the Presidency. I once heard that a person grows with a number of problems he or she faces. In EMSA Europe some knots were nearly impossible to untie... but the effort itself, shared with the most supportive and dedicated Colleagues, was turned into a path of self-discovery which provided more life lessons than any academia or school.



## 150 words or less - 150 memories or more

### Tin Knežević

*EMSA President 2009-2011*



How does one write down a story that has so many sideways and not many endings?

And more importantly... How does one express in words that which he only feels in his heart?

Life has a funny way of leading us through uncharted waters, unexpected storms and onwards towards horizons we have never dreamed of yearning. And yet, once the rough seas have done their share of pounding the ship and the sailor is not the same person that once boarded the ship, we find ourselves in another harbour... Preparing for yet another adventure... Holding in our hearts the memories of the Storm that has made us.

And now, sitting down and gently flipping through what seem to be countless memories, I cannot but hold them dear, smile and think to myself: „The effort was worth the Journey...“

## Become an EMSA member

in 4 Easy Steps



Simple online application



Individual Membership



Faculty Member Organisation



Approval by the EMSA European Board



## Welcome to the BLUE FAMILY !

Low annual fees:

- 120 € Faculty Membership (FMO)
- 20€ Individual Membership (IM)

One time registration fees:

- 50€ FMO
- 10 € IM

## Get plugged in!

### Emsa Membership



- means belonging to an inspiring network of medical students.



- gives you and your faculty a platform to voice your input in the development of policies and curriculum standards in Europe



- personal development: mentoring, observerships/traineeships, twinning, national and international symposia and workshops (including discounts) and internships.



- lets you jump directly from the local to the international level opportunities for everyone!



- opens you up to a much larger world of knowledge and informal education



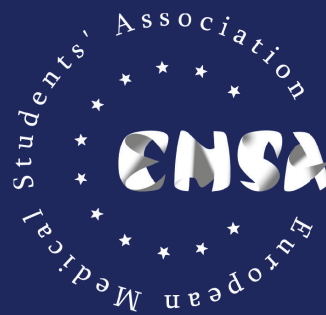
- gives you access to resources and assistance to organize or participate in our over 40 projects.



- links you to our partnerships network with many student and professional organizations around Europe, benefits of which extend to all our members.



- brings you to our six international events, where you can meet students from all over the continent. EMSA is more than a student association; it's a large Europe-wide family of lifelong friends!



FIND US!

- @emsa\_europe
- @emsa\_europe
- /emsa.europe
- /EMSAEU

European Medical Students' Association  
c/o CPME, Rue Guimard 15,  
1040 Brussels, Belgium

info@emsa-Europe.eu  
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Connecting medical students...  
...all across Europe

# EUROPEAN MEDICAL STUDENTS' ASSOCIATION

### What is EMSA?

We are a volunteer-led non-governmental organization that represents and advocates for medical students in geographical Europe.

Founded in 1991, EMSA has stayed one step ahead of change throughout its journey and growth. In 2005, the European Commission endorsed the organizations' activities.



### OUR MISSION

We at EMSA seek to inspire and empower the next generation of healthcare professionals in geographical Europe by acting as a platform for increased interaction and knowledge exchange between medical students. Our project and activities are structured under five main pillars/fields.

### The Five Pillars

#### Medical Education

Want to improve and develop the curricula of our education? This pillar empowers you to facilitate co-operation between faculty and students, as well as be involved in activities, projects and conferences that aim to raise the standard.

#### Medical Science

Interested in research, webinars and scientific congresses? This pillar supports EMSA members as young researchers by being a conduit for the acquisition and transfer of knowledge. EMSA is a proud supporter of Open Access initiatives.

#### Medical Ethics & Culture

Autonomy, Beneficence, Non-Maleficence and Justice. This pillar builds up a generation of doctors aware of ethical and psychological aspects of healthcare without compromising on compassion during patient contact

#### European Integration

EMSA aims to foster regional co-operation by strengthening international and regional student activities such as the twinning project. These support the exchange of ideas, cultures and experiences amongst a diverse group of students.

#### Public Health

How does medicine interact with economy, politics, education and society in general? Interested in (non-) communicable diseases, social determinants of health and what action you can take to ensure a better, healthier Europe? The public health pillar is involved in all these and more!

#ILoveEMSA



Find Us!

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