

# An Introduction to the Overcoming MS Program

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30<sup>th</sup> June 2021

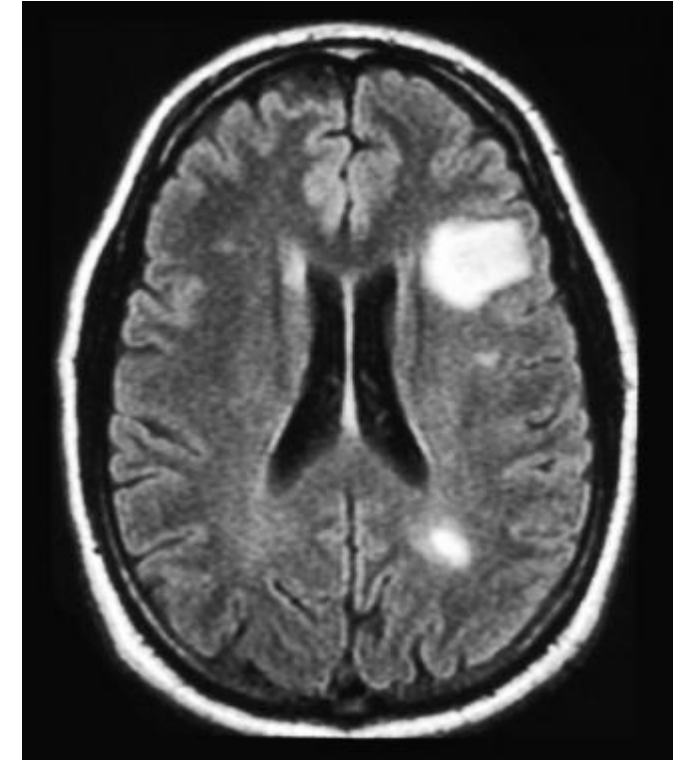


**OVERCOMING**  
MULTIPLE  
SCLEROSIS



# What is Multiple Sclerosis (MS)?

- ▶ **Multiple** - more than one location
- ▶ **Sclerosis** - scarring, thickening or hardening
  
- ▶ Disease of brain and spinal cord
  - ▶ Central nervous system - **CNS**
  
- ▶ Most common disabling neurological disorder of young adults
- ▶ Most are diagnosed in their 20s and 30s
- ▶ 3 times more common in women than men
- ▶ Currently there is no cure, but there is a realistic hope of living a full life after a diagnosis of MS.



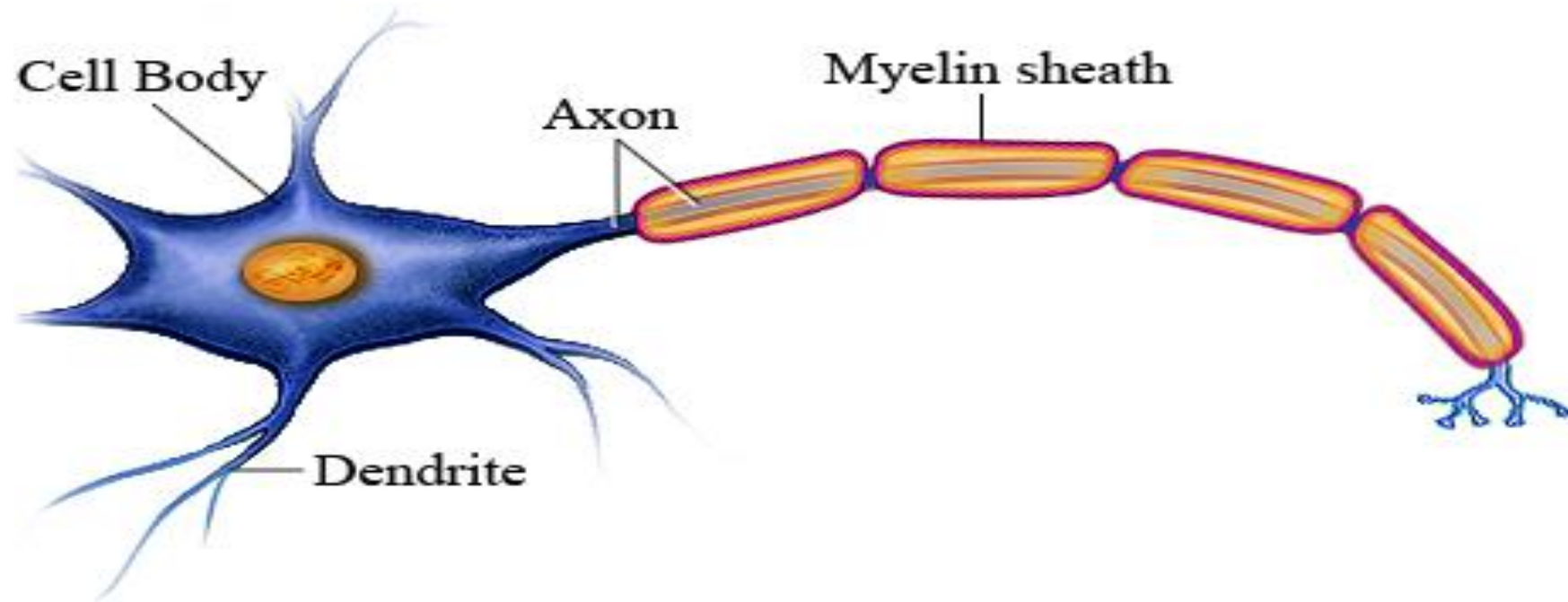
# Epidemiology of MS



*“The study of how often diseases occur in different groups of people and why”*

- ▶ Approximately 1 in 600 people in U.K. (130,000) with MS
- ▶ Incidence is 1 in 1000 worldwide (~3 million)
- ▶ Rates increase with distance from the Equator
- ▶ Becoming more common...
  - ▶ Likely due partly to increasingly unhealthy lifestyles - “Western Diet”

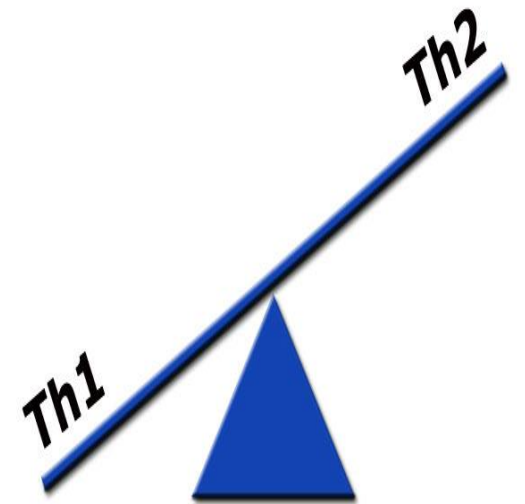
# Nerve Cell (Neuron)



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# Immunology

- ▶ **Blood Brain Barrier:**
  - ▶ Brain's security system
  - ▶ Highly selective barrier, lining brain's blood vessels
  - ▶ Stops many substances from passing through, including white blood cells
    - ▶ In MS, we think the barrier becomes "leaky"
- ▶ **Th1 and Th2 Immune Responses:**
  - ▶ See-saw balance of immune system:
    - ▶ Th1: promoting inflammation to protect against attack
    - ▶ Th2: anti-inflammatory and promote repair
  - ▶ MS tends to be imbalanced towards Th1



# What Happens in MS?

- ▶ *An inflammatory demyelinating condition of the CNS:*

Immune cells cross blood brain barrier

Immune system mistakenly attacks myelin sheath

Nerve impulses slowed, distorted or not transmitted

Scarring forms at inflammation site, with some re-myelination

***OVER TIME, NERVE FIBRE CELL DEATH OCCURS***

# What Causes MS?

▶ **Multiple complex interacting factors**

▶ **Genetics: >240 genes implicated**

- ▶ Incidence in both identical twins is only 1 in 4
- ▶ Risk is 7x higher for **siblings** of pwMS than general population (1 in 37)
- ▶ Risk is 5x higher for **children** of pwMS than general population (1 in 67)

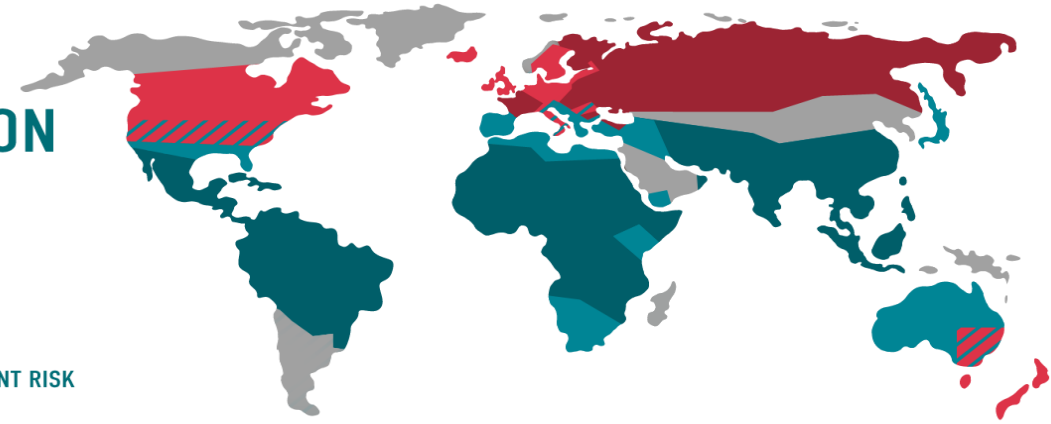
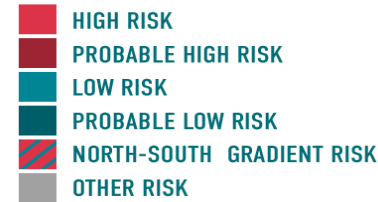
▶ **Infection:**

- ▶ No single agent identified
- ▶ Theory that MS is an abnormal delayed response to infection that can lie dormant within the body e.g. EBV



# What Causes MS?

## GLOBAL DISTRIBUTION OF MS



### ▶ ***Environment:***

- ▶ Incidence lowest at Equator
- ▶ Living in low risk area to age 15, risk stays low even if moving to higher risk area
- ▶ Some ethnic groups (Inuit) have low incidence despite living in high risk areas?!

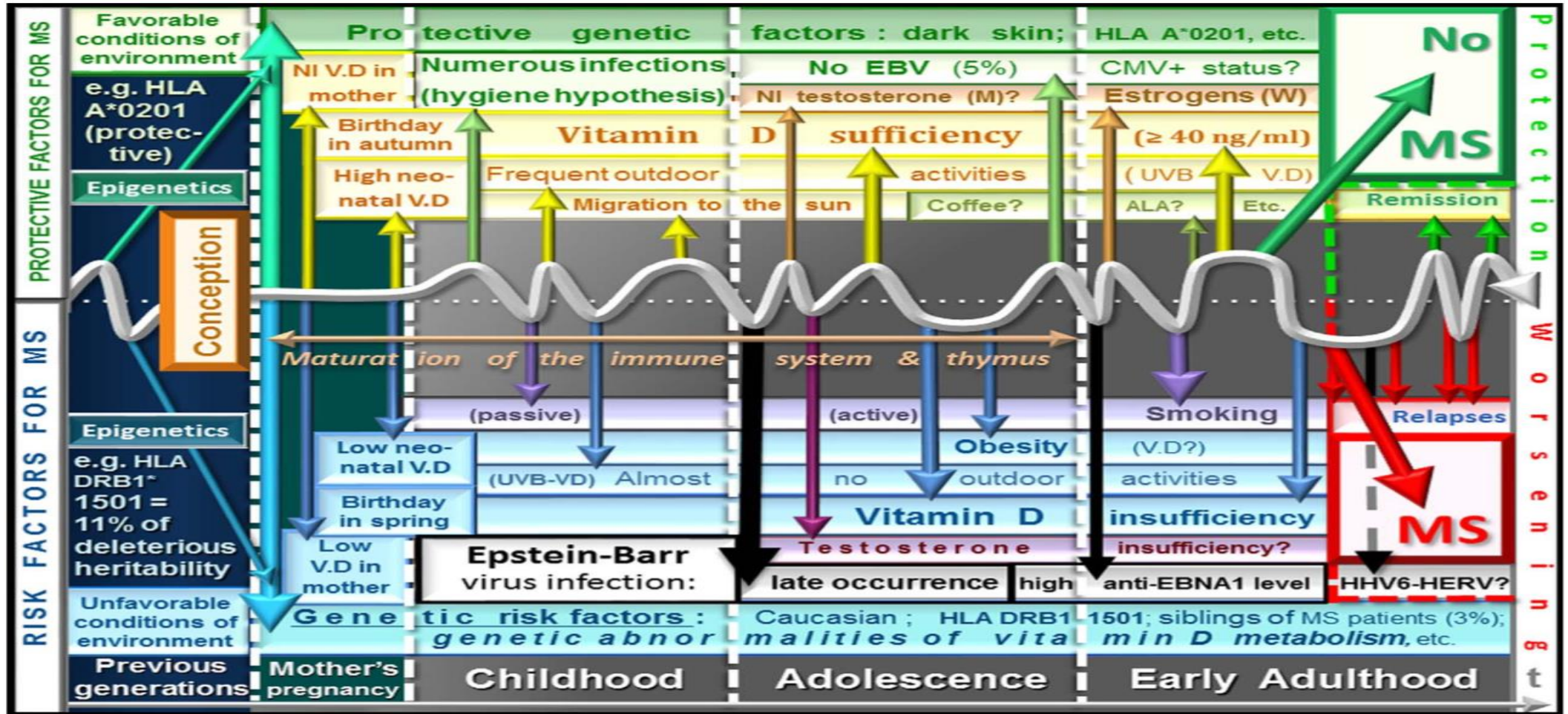
### ▶ ***Vitamin D:***

- ▶ Low levels associated with increased MS risk and disease progression
- ▶ Regulates immune response

### ▶ ***“Western” Lifestyles...***



# What Causes MS?



C. Pierrot-Deseilligny, J.-C. Souberbielle *Multiple Sclerosis and Related Disorders* 14 (2017) 35-45

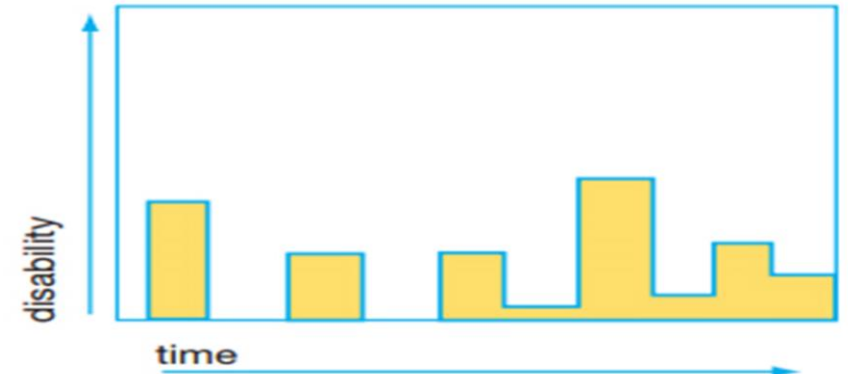
# Types of MS: We don't always fit into a box!

- ▶ **Relapsing Remitting MS**
  - ▶ Benign MS
  - ▶ Clinically isolated syndrome
  - ▶ Rapidly evolving severe RRMS
- ▶ **Secondary Progressive MS**
  - ▶ Up to 66% after 25 years
- ▶ **Primary Progressive MS**
  - ▶ 10-15%, progressive disability from outset
- ▶ **Relapsing Progressive MS: 5%**



# Relapsing Remitting MS

- ▶ Most common form: **65-70% of patients at onset**
- ▶ Symptomatic episodes with partial or complete recovery
  - ▶ Misleading term - disease can be active on MRI without symptoms (10:1)
- ▶ Relapse is appearance of a new symptom or worsening old symptoms
  - ▶ Must last >24 hours - but it can be hard to tell!
- ▶ Frequency of relapses and severity of symptoms are unpredictable
  - ▶ On average 1-2 relapses annually
- ▶ Medical therapies reduce relapse frequency and some slow disease progression



# Impact of MS

- ▶ Cost to UK economy up to £4.2 billion annually
- ▶ Employment status varies hugely
- ▶ Early retirement affects up to 27% in Europe
- ▶ On average, MS results in loss of 10 working years
- ▶ 50% of people with MS suffer at least 1 episode of clinical depression
- ▶ Impacts whole family
- ▶ Most are diagnosed when making major life decisions
  - ▶ Career, marriage, starting a family

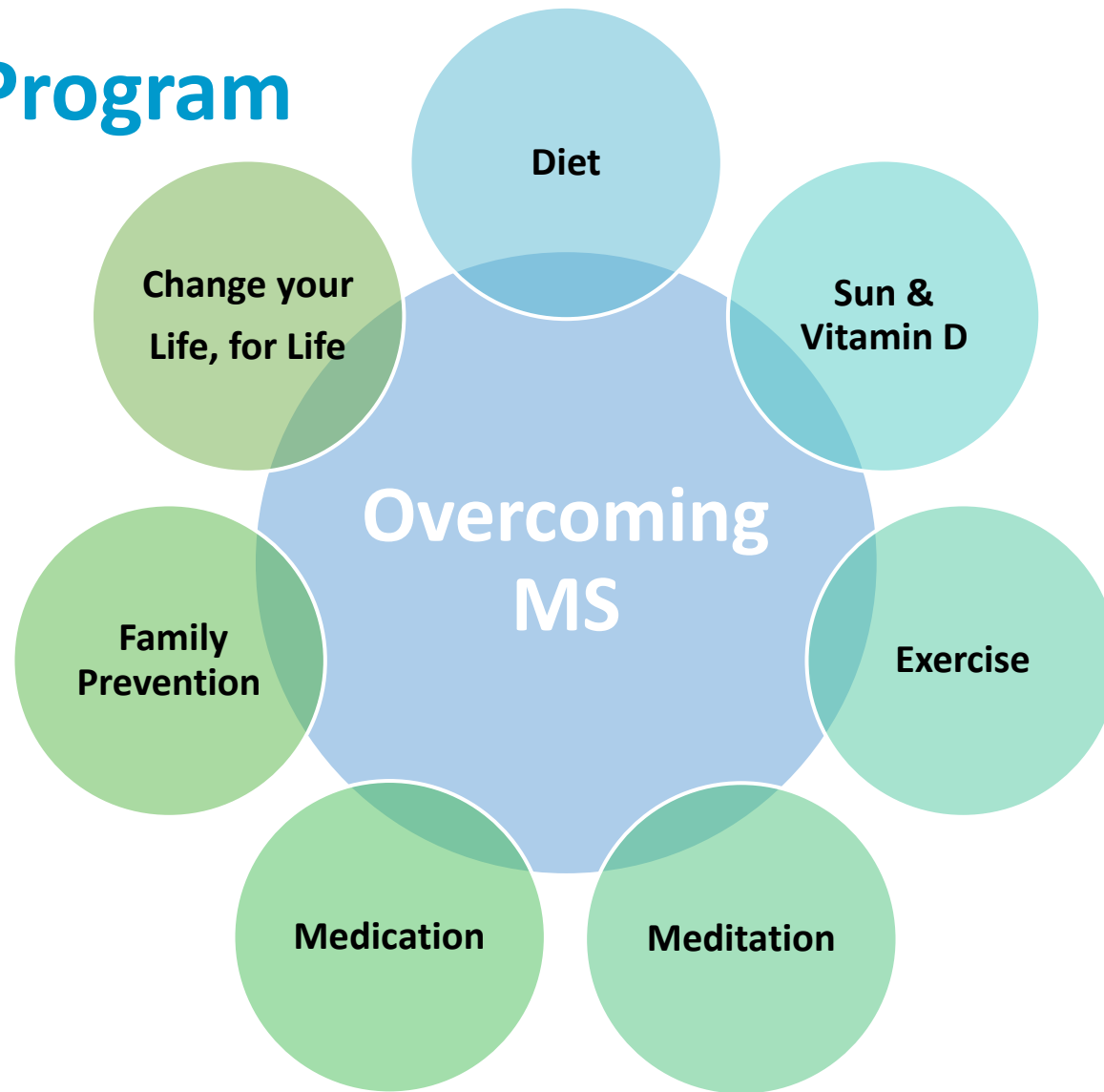


## Busting Some MS Myths...

- ▶ MS does slightly reduce life-expectancy
  - ▶ **BUT** it is **NOT** a “terminal illness”
- ▶ Majority will **NOT** need to use a wheelchair regularly
- ▶ You should **NOT** reduce your level of physical activity!
- ▶ You won't necessarily have to stop working
- ▶ No effect on pregnancy outcomes
  - ▶ Relapse rates are reduced during pregnancy - medium to long-term benefit
  - ▶ Breastfeeding protective to mother and baby (50% reduction in lifetime risk)

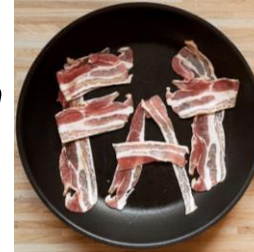


# The Overcoming MS Program



## 1: Diet

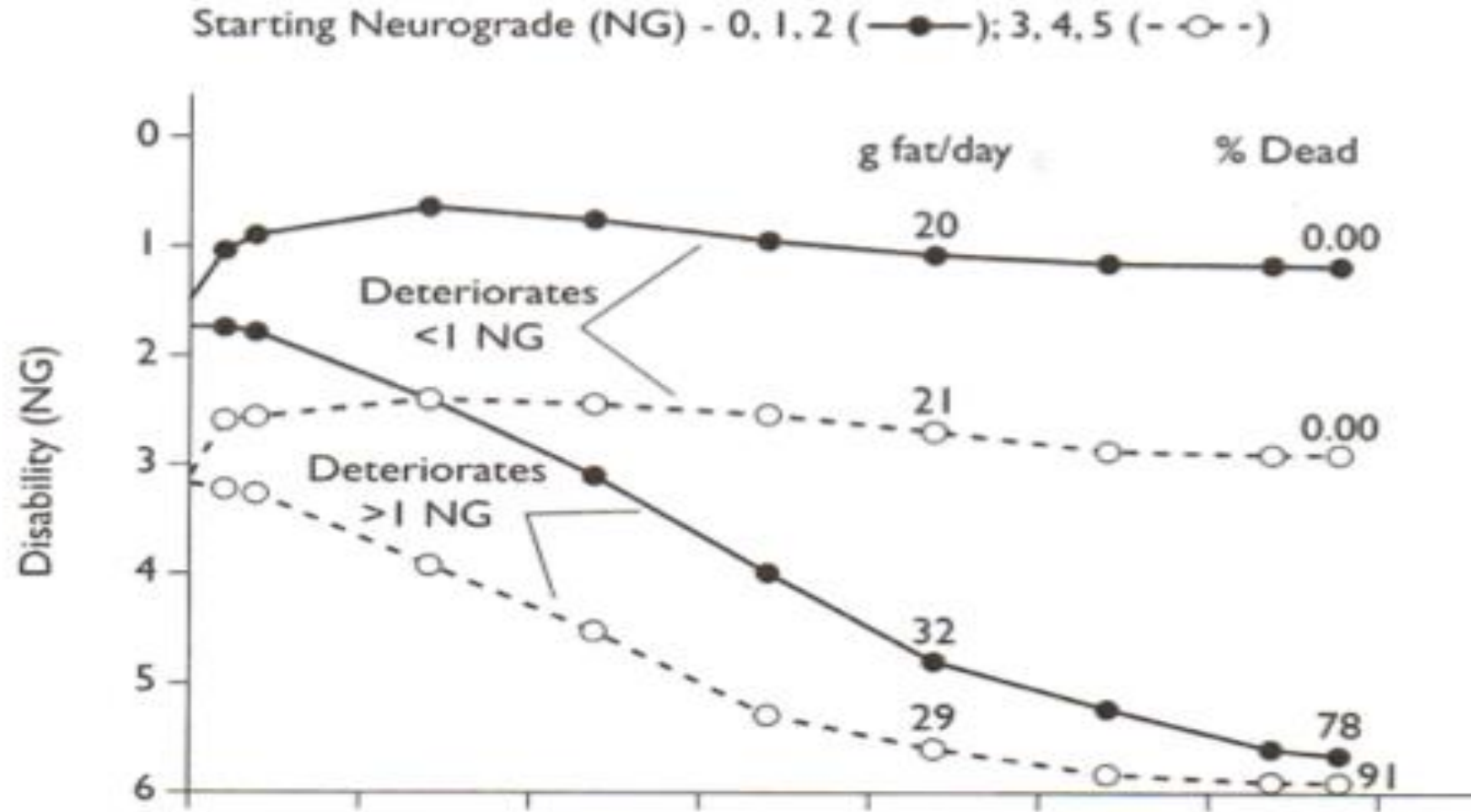
- ▶ *Cornerstone of the Overcoming MS program*



- ▶ Primary evidence comes from Prof. Roy Swank's pioneering study
- ▶ Followed 150 pwMS and their families for 34 years
- ▶ Published in major medical journals, but largely ignored...
- ▶ It showed that a diet low in saturated fats (<20g/day):
  - ▶ Significantly **reduced disability accumulation and disease progression over time**
  - ▶ Reduced relapses by **80% at 1 year and by 95% at 5 years**
  - ▶ **34 years later, 95% in low fat group were well and ambulant**



# Swank's Results

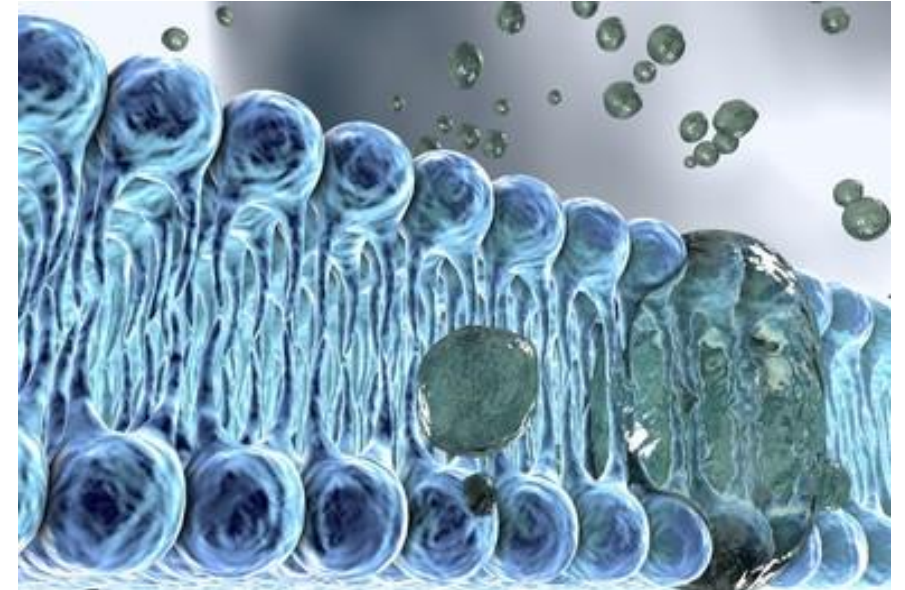


[https://doi.org/10.1016/0140-6736\(90\)91533-G](https://doi.org/10.1016/0140-6736(90)91533-G)



# 1: Diet – You are what you eat!

- ▶ Fats and oils are made up of fatty acids
- ▶ Cell membranes are made of fats
- ▶ ***Saturated fats***
  - ▶ Solid at room temperature, mainly from animals
  - ▶ Rigid, sticky, inflammatory and degenerate
- ▶ ***Polyunsaturated fatty acids (omega 3 and 6):***
  - ▶ Liquids, mainly plants and seafood
  - ▶ Make cell membranes soft, flexible, less “sticky” and resist degeneration
  - ▶ Converted into immune system messengers:
    - ▶ Omega-3 are anti-inflammatory
    - ▶ Omega-6 are pro-inflammatory
- ▶ *Diets high in omega-3 shift immune balance to Th2*



# 1: Diet

- ▶ **HOLISM Study:**
  - ▶ **Meat and dairy free diet** = significantly better quality of mental and physical health
  - ▶ Daily flaxseed oil - 60% reduced relapse rate
  - ▶ Eating fish 3 times weekly - 50% reduced rate
- ▶ **Dairy:** Butyrophyllin in cow's milk mimics myelin, can cause auto-immune response and is pro-inflammatory
- ▶ **Alcohol:** moderate alcohol consumption associated with better quality of life than low or high intake
- ▶ **OMS recommends a plant-based wholefood diet plus seafood, supplemented with 20 - 40mls of flaxseed oil daily**

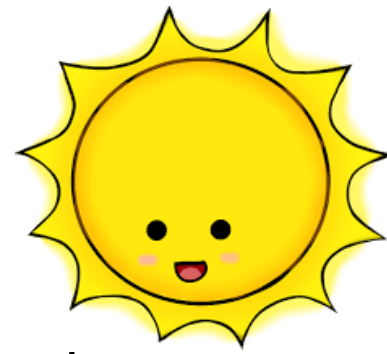


## 2: Sunlight and Vitamin D3



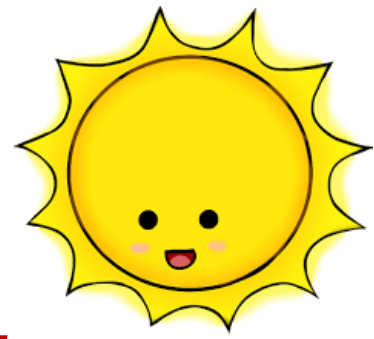
- ▶ Vitamin D has a key role in immune regulation and brain protection
- ▶ Evidence for reduction in depression, hypertension, heart disease, diabetes and some cancers
- ▶ Substantial evidence for vitamin D in MS prevention and in reducing disease activity:
  - ▶ **75% of MS cases may be prevented with vitamin D level >100 nmol/L**
  - ▶ **Higher vitamin D results in less new lesions, relapses and less brain shrinkage**
  - ▶ 50nmol/L increase in level = 57% less relapses and 57% less new lesions
  - ▶ Higher levels also lead to less disability progression over time

## 2: Sunlight and Vitamin D3



- ▶ Vitamin D is made in skin on exposure to sun's UVB rays
- ▶ Primary function is to absorb calcium, magnesium and phosphate from gut - essential for growth and bone health
  
- ▶ Skin manufactures 1000 IU/minute, to a maximum of 15000 IU daily
  - ▶ IF UV index 7 and near naked in sun
  - ▶ **BUT** less skin exposure for longer won't increase vitamin D synthesis further!
- ▶ UV index decreases directly with distance from Equator
  
- ▶ ***Small, regular amounts of sunlight are perfectly safe and may actually protect against skin cancers***

## 2: Sunlight and Vitamin D3



- ▶ *Aim for blood level 150 - 225 nmol/L (60-90 ng/mL)*
- ▶ *5000 - 10000 IU of Vit. D daily or 15 mins sun 3-5 times/ week*

- ▶ If levels are very low on first test, a one-off mega dose (e.g. 600,000IU) is safe way to raise blood levels quickly
- ▶ Safe in pregnancy and breast-feeding - **EXTRA IMPORTANCE!**



- ▶ Many Governments Guidance advise routinely taking 400-800IU daily
- ▶ Testing may not be available publicly, but can be arranged online  
e.g. [www.betteryou.com](http://www.betteryou.com) OR [www.thriva.com](http://www.thriva.com)

### 3: Exercise and Movement



- ▶ Exercise has many positive effects:
  - ▶ Reduces blood pressure, cholesterol, risk of infection
  - ▶ Protects against heart disease, stroke, some cancers, type 2 diabetes, osteoporosis, dementia
  - ▶ Reduces risk of early death by up to 30%
- ▶ ***Regular exercise is as effective as many medications in a range of diseases***
- ▶ In the past, PwMS were told to avoid exertion, but we now know there are huge benefits from regular exercise

### 3: Exercise and Movement Benefits in MS

- ▶ Increases muscle strength, energy levels, walking speed, sexual, bowel and bladder function, quality of life
- ▶ Reduces risk of depression by 50%
- ▶ Improves cognitive performance, information processing and problem solving
- ▶ Stimulates neurons and strengthens connections
- ▶ Reduces brain shrinkage
- ▶ Appears to *slow disease progression*
- ▶ Promote neuroprotection, neuro-regeneration and
- ▶ ***Anti-inflammatory effects - promotes Th2 balance***



## 3: Exercise and Movement

- ▶ Greatest benefits in those going from sedentary lifestyle to regular, moderate intensity exercise
- ▶ Start low and increase slowly
- ▶ Some with MS find resistance training provokes less symptoms than endurance training
- ▶ A qualified trainer can help in designing a suitable program



- ▶ ***OMS recommends 30 minutes of exercise 3-5 times per week***



## 4: Meditation & Mindfulness

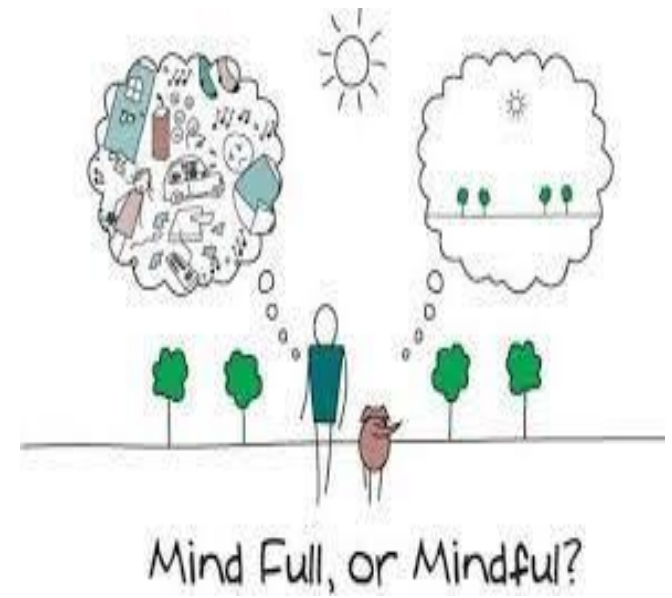


- ▶ ***Mindfulness is “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” J. Kabat Zinn***
- ▶ Vast evidence base on mind-body connection, and how it impacts health
- ▶ Stress and major life events can trigger MS relapses, provoking a Th1 response
- ▶ Body is programmed with the “evolutionary fight or flight” response
  - ▶ Increased adrenalin secretion
  - ▶ Increased heart rate and blood pressure
  - ▶ Blood diverted to muscles
  - ▶ Inflammation: mobilise immune system for injury, blood “thickens”
- ▶ ***Meditation shifts immune balance to Th2***



# 4: Meditation & Mindfulness

- ▶ Mindfulness:
  - ▶ Increases grey and white matter on MRI
  - ▶ Promotes neuroplasticity and new neural networks
  - ▶ Can lengthen telomeres, reducing cellular age
    - ▶ *It makes you younger!*
- ▶ Improves quality of life and protects against depression in MS
  - ▶ NICE recommended first-line treatment for depression/anxiety
- ▶ ***OMS recommends 30 minutes of meditation daily***



## STEP 5: Medication

- ▶ ***OMS is NOT against disease modifying drugs***
- ▶ ***Early medical treatment can alter the MS disease course***
  
- ▶ **BUT** many issues to consider when choosing a treatment
- ▶ Address these with your doctor and/or MS nurse
- ▶ Must weigh up benefits with risks of potentially serious side effects
  
- ▶ Currently 12 disease modifying drugs (DMDs) licensed to treat RRMS
  - ▶ Reduce relapse rate and severity, some reduce disease progression
  - ▶ 1 licensed for treatment of active SPMS (siponimod)
  - ▶ 1 licensed for treatment of early PPMS (ocrelizumab)



## 6: Prevention for Family Members

**Genetics:** Accounts for 25% of an individual's risk of MS

▶ **Stop smoking:**

- ▶ Almost doubles risk of developing MS
- ▶ 4x more likely to develop progressive MS and 8 years earlier
- ▶ Passive smoking doubles a child's risk

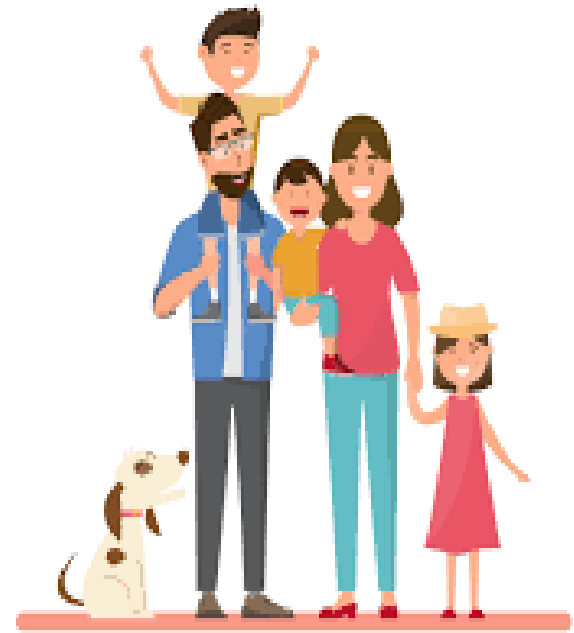
▶ **Vitamin D:**

- ▶ Low dose frequent sun exposure, in winter 5,000IU daily (aim >100 nmol/L)
- ▶ Vitamin D for babies should start in pregnancy

▶ **Diet:** Low in saturated fat, supplemented with flaxseed oil

▶ **Stress:** Better and together

*“An ounce of prevention is worth a pound of cure” B. Franklin*

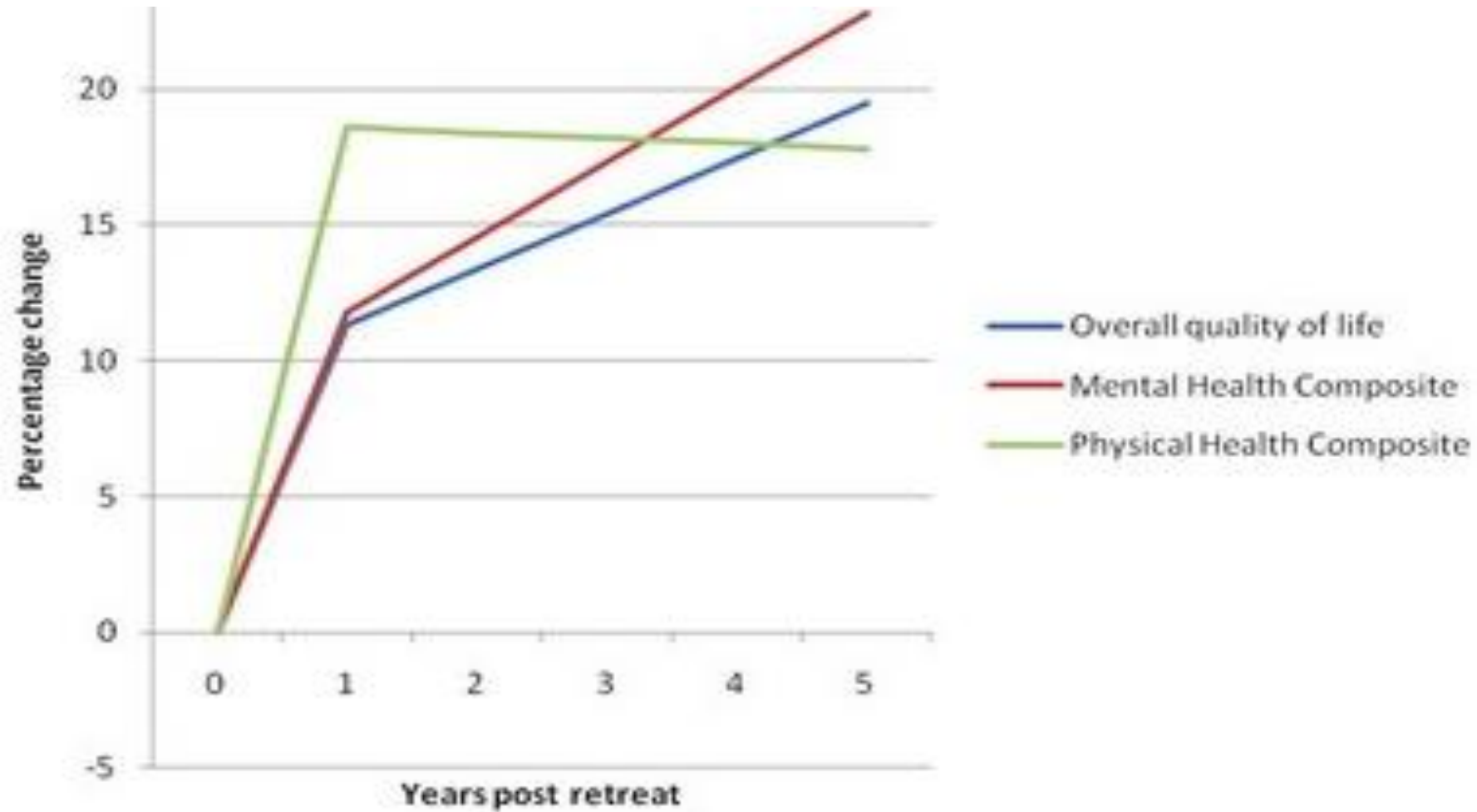


# The HOLISM Study



- ▶ HOLISM showed ***improved health outcomes with the OMS Program***
  - ▶ 60% relapse rate reduction with flaxseed oil supplementation
  - ▶ 42% less chance of disability with “healthy fat diet”
  - ▶ 33% relapse rate reduction on any vitamin D dose
  - ▶ Significant reduction in risk of depression and fatigue levels
- ▶ ***Part 2*** of HOLISM is now examining how lifestyle affects MS in the ***long-term***

# The STOP-MS Study



# HOLISM study – Integrated regressions overview

Variable	Not smoking	Moderate alcohol use	Healthy diet	Flaxseed oil supplement	Latitude/vit D supplements	Moderate to high physical activity levels	Frequent meditation	Fewer comorbidities	DMD use
Disability <sup>1</sup>	↓	↓	↓	↓	↓	↓	↑	↓	↓
Quality of life <sup>2</sup>	↑		↑	↑	↑	↑	↑	↑	
Relapse rate <sup>1</sup>			↓	↓				↓	↓
Fatigue <sup>3</sup>		↓	↓	↓	↓	↓			↑
Depression <sup>4</sup>	↓	↓	↓	↓	↓	↓	↓		IFN ↑

\*Regression models were all-in models that included socio-demographics, all modifiable lifestyle factors, medication use and number of comorbidities

1. Jelinek GA, De Livera AM, Marck CH, Brown C, Neate SL, Taylor KL, Weiland TJ. Associations of lifestyle, medication, and socio-demographic factors with disability in people with multiple sclerosis: an international cross-sectional study. PLOS ONE 2016;11(8):e0161701
2. Jelinek GA, De Livera AM, Marck CH, Brown C, Neate SL, Taylor KL, Weiland TJ. Lifestyle, medication and socio-demographic determinants of mental and physical health-related quality of life in people with multiple sclerosis. BMC Neurol 2016;16(1):235
3. Weiland TJ, Hadgkiss EJ, Pereira N, Marck CH, van der Meer DM, Taylor KL, Jelinek GA. Clinically significant fatigue: Prevalence and associated factors in an international sample of adults with multiple sclerosis. PLOS ONE 2015;10(2):e0115541
4. Taylor KL, Hadgkiss EJ, Jelinek GA, Weiland TJ, Pereira N, Marck CH, van der Meer DM. Lifestyle factors and medications associated with depression risk in an international sample of people with multiple sclerosis. BMC Psychiatry 2014;14(1):327

# 7: Change your Life, for Life



*You are not to blame for getting MS, but **YOU** are the best person to deal with it:*

- ▶ Eat a plant-based, wholefood diet plus seafood, with daily flaxseed oil
- ▶ Get enough vitamin D, through sunlight or by taking 5000 - 10000 IU daily
- ▶ Exercise for 30 minutes, 3 - 5x per week
- ▶ Meditate for 30 minutes daily
- ▶ Work with your doctor and take medication if necessary
- ▶ Prevention for your family members



*All the elements are effective, but STOP-MS shows they work best together*



## One Final Thought...

- ▶ *1 year ago, 98% of the atoms in your body weren't there, so it's never too late to change!*



*Dr. Paul C. Aebersold, 2008*

# My Own Philosophy...

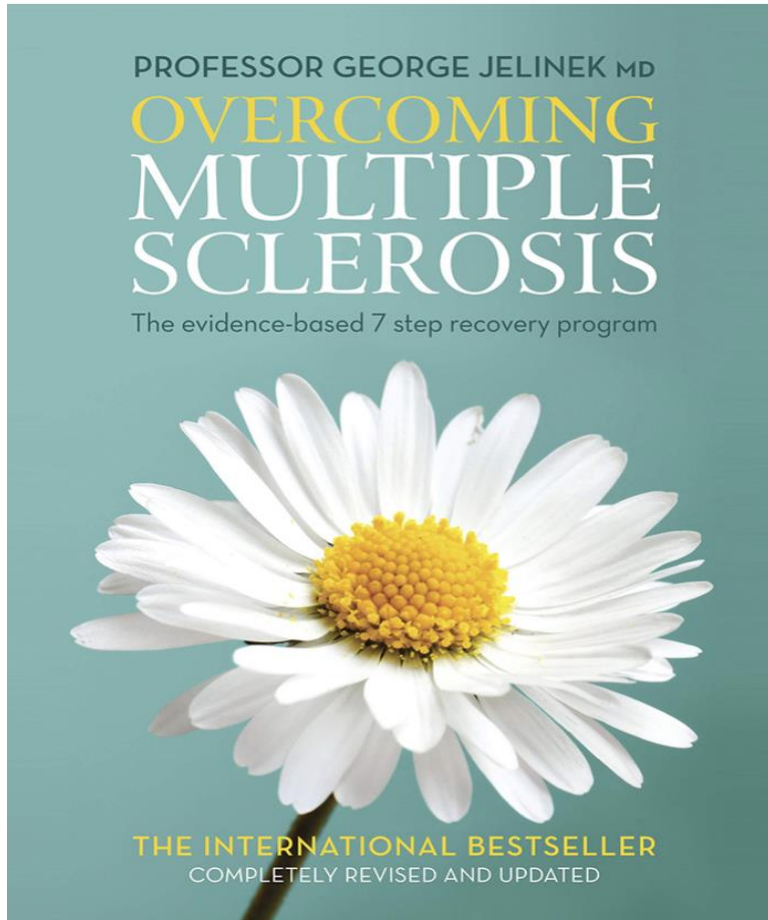
“Though much is taken, much abides;  
and though We are not now that strength  
which in old days Moved earth and heaven,  
that which we are, we are;  
One equal temper of heroic hearts,  
Made weak by time and fate,  
but strong in will  
To strive, to seek, to find,  
and not to yield.”

Alfred Lord Tennyson, Ulysses.





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*“I felt powerless with my MS diagnosis for almost three years, and then I found Overcoming MS and ordered the book. I’d have to stop reading every few pages to tell my husband some new fact that was blowing my mind. OMS was the hand that reached out to pull me up, and now, I have somewhere to turn.”*

*Ashley, OMSer*

Thank You - email me at:  
[Jonathan@overcomingms.org](mailto:Jonathan@overcomingms.org)

Any Questions?



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