

Nutrition and Anti-Aging: Evidence-based Strategies for Healthy Life Expectancy

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Main Premise of Seminar

- Chiropractors are in a unique situation - able to identify at risk patients before end-stage disease is present, and to provide patients with personalized nutrition, exercise, supplementation and other lifestyle recommendations that are best suited to their needs and to reverse disease risk factors, provide complementary measures to improve health outcomes for existing conditions, and slow/reverse age-related changes influenced by the body's aging clock.
- The Goal is help patients maintain a highly functioning body and mind for as long as possible = Healthy Life Expectancy (Health Optimization)

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Main Topics Covered in Presentation

1. 12 Physiological Processes Linked to Healthy Life Expectancy
2. Theories of Aging
3. Countering Timed Events in the Body's Aging Clock to Preserve Function after Age 40
4. Other Conditionally- Essential Nutrients Whose Synthesis Declines with Age.
5. In-Office Healthy Aging and Functional Assessment
6. Further Studies in Advanced Nutritional and Lifestyle Therapies

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12 Key Strategies for Healthy Life Expectancy
Physiological, but Stress/Emotional Factors – also important

1. Minimize Oxidation/Inflammation
2. Slow Rate of Cell Division
3. Encourage Cell Differentiation and Normal DNA Replication (Avoid Hypomethylation)
4. Ideal Fasting Glucose and HbA1c
5. Ideal Blood Pressure
6. Fitness: Aerobic, Strength Train, Flexibility
7. Attain and Maintain Ideal Weight and Waist Circumference
8. Maintain Bone Density
9. Ideal Levels for Cholesterol and Homocysteine (CVD)
10. Adequate Fiber Intake (soluble and insoluble)
11. Optimize Intake of Anti-cancer Phytonutrients
12. Counter Aging Clock with Targeted Nutrients After 40 yrs.

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Sources of Free Radicals - Oxidation

1. Mitochondrial Electron Leakage:

2-5% of electrons leak out of mitochondrial membrane and react with oxygen in cytosol of cell forming ROS with unpaired electron

1. Superoxide Anion HO⁻
2. Then Hydrogen Peroxide HOOH
3. Then Hydroxy Radicals – HO⁻ + -OH (transitional metal acts as catalyst)

With Aerobic Exercise – ROS increases with increased mitochondrial electron transfer to form ATP energy

Sometimes an electron gets bumped up to higher orbiting shell (becomes unpaired) known as **Singlet Oxygen (SO)** – very reactive as well.

SO occurs with X-rays, CT-scans, UV-light and during course of normal metabolism on occasion.

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Other Sources of Free Radicals:

1. Cigarettes Smoke – 30% of all cancers
2. Alcohol – 7% of all cancers - oropharynx, Larynx, Esophagus, Liver, Colon, Rectum, Female Breast CA (More recently Prostate) – 2016 Update <https://pubmed.ncbi.nlm.nih.gov/26016848/>
3. Polycyclic Aromatic Hydrocarbons (smoked foods etc.)
4. Heterocyclic Amines (charred foods)
5. Air pollutants such as asbestos, nitrous oxide, benzene, carbon monoxide, chlorine, formaldehyde, ozone, and toluene
6. Chemical solvents - cleaning products, glue, paints, paint thinners
7. Pesticides and Herbicides
8. Water Pollutants such as chloroform and other trihalomethanes from chlorination
9. Radiation - X-Rays, CT scan
10. Ultra-violet light - sun, tanning beds
11. Nitrosamines *

Goal = Minimize Exposure to Free Radicals and Increase Antioxidant Defense

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Excess Free Radicals Damage Causes:

- DNA Damage – aging and cancer
- Mitochondria – mitochondrial dysfunction, defective mitophagy
- Enzymes – compromised function
- Cell membrane –defective signaling
- LDL –cholesterol – heart disease
- Eyes – cataracts and macular degeneration
- Brain – dementia and other neurodegenerative diseases (PD, MS, ALS)
- Immune System (Antioxidant Paradox) 2017 Review <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5707683/>
- Glucose Intolerance – Insulin Resistance (NAC helps overcome)
- Skin – wrinkles or photoaging, skin cancer

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2. Slow Rate of Cell Division:

Why? Mutations Increase with rapid cell division
 Telomeres Shorten with rapid cell division

Nutrients and Factors That Slow Cell Division

- Vitamin D
- Adequate Calcium – colon cancer
- Vitamin A
- Carotenoids (beta-carotene, lycopene etc.)
- Omega-3 fats via Prostaglandin- series 3 synthesis (also reduces inflammation and dehydrothromboxane B2 and can re-lengthen telomeres)
- Melatonin
- Low Animal Fat and Trans-fat Diet (Exception is Fish) – **Bad fats also increase inflammation**
- Avoid Alcohol
- Overweight – increases insulin, estrogen, decrease SHBG (diabetics have increased cancer risk and poorer prognosis)
- Avoid Hormone Replacement Therapy Including GH

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3. Encourage Cell Differentiation

With Each cell division, more mature looking cells (differentiated) are more resistant to cancerous changes:

Nutrients Required for Differentiation:

1. Vitamin A – 50% of individuals get less than 50% of Vitamin A requirement/d
2. Carotenes – orange, yellow, dark green vegetables
3. Vitamin D – sun, supplements, fish
4. Melatonin – supplements after 40-50 yrs. (see this later)

And Normal DNA Synthesis (**Folic Acid, Vitamin B12**)

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4. Maintain Fasting Blood Glucose and Insulin

Ideal is under 4.7 mmol/L fasting glucose and under 5.0 Hb A1c)

Higher Glucose Results In:

- Increased oxidation and inflammation (heart attack, insulin resistance)
- Advanced Glycosylated Proteins (AGE-Proteins)

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Nutrition and Lifestyle Effects on Blood Pressure

1. Weight Loss – 10-15 lbs can reduce BP in 2/3 of overweight hypertensive pts (via decreased insulin and sodium resorption and less pressure on vascular system)
2. Reduce alcohol intake – increases systolic BP at 2 drinks/d
3. Sodium Restriction -1/3 of hypertensive patients have sodium-sensitive hypertension.
4. Calcium/Magnesium supplementation (1-1.5 gms/0.6-1 gm respectively) - See next slides for more on magnesium
5. Omega-3 fats (1-2gms per day)

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6. Garlic supplementation - 4,000 mcg allicin content (1/2-1 clove) – screen for prothrombin and ulcers, as may cause GI bleeding
7. CoQ10 and Hawthorn (CoQ10: 150 -200 mg; Hawthorn: 175 – 250 mg) – via increased nitric oxide synthesis (Vasodilation)
8. Aerobic Exercise – decreases basal adrenaline levels (decreasing systolic pressure and arteriole resistance)
9. Ground Flaxseed – 50 gm per day (2 tablespoons)
10. Autogenic training (Biofeedback, Meditation, Progressive Relaxation)

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6. Physical Fitness

1. Aerobic Fitness:

| Female (values in ml/kg/min) | | | | | | |
|------------------------------|-----------|-------------|-------------|-------------|-------------|----------|
| Age | Very Poor | Poor | Fair | Good | Excellent | Superior |
| 13-19 | < 25.0 | 25.0 – 30.9 | 31.0 – 34.9 | 35.0 – 38.9 | 39.0 – 41.9 | > 41.9 |
| 20-29 | < 23.6 | 23.6 – 28.9 | 29.0 – 32.9 | 33.0 – 36.9 | 37.0 – 41.0 | > 41.0 |
| 30-39 | < 22.8 | 22.8 – 26.9 | 27.0 – 31.4 | 31.5 – 35.6 | 35.7 – 40.0 | > 40.0 |
| 40-49 | < 21.0 | 21.0 – 24.4 | 24.5 – 28.9 | 29.0 – 32.8 | 32.9 – 36.9 | > 36.9 |
| 50-59 | < 20.2 | 20.2 – 22.7 | 22.8 – 26.9 | 27.0 – 31.4 | 31.5 – 35.7 | > 35.7 |
| 60+ | < 17.5 | 17.5 – 20.1 | 20.2 – 24.4 | 24.5 – 30.2 | 30.3 – 31.4 | > 31.4 |

| Male (values in ml/kg/min) | | | | | | |
|----------------------------|-----------|-------------|-------------|-------------|-------------|----------|
| Age | Very Poor | Poor | Fair | Good | Excellent | Superior |
| 13-19 | < 35.0 | 35.0 – 38.3 | 38.4 – 45.1 | 45.2 – 50.9 | 51.0 – 55.9 | > 55.9 |
| 20-29 | < 33.0 | 33.0 – 36.4 | 36.5 – 42.4 | 42.5 – 46.4 | 46.5 – 52.4 | > 52.4 |
| 30-39 | < 31.5 | 31.5 – 35.4 | 35.5 – 40.9 | 41.0 – 44.9 | 45.0 – 49.4 | > 49.4 |
| 40-49 | < 30.2 | 30.2 – 33.5 | 33.6 – 38.9 | 39.0 – 43.7 | 43.8 – 48.0 | > 48.0 |
| 50-59 | < 26.1 | 26.1 – 30.9 | 31.0 – 35.7 | 35.8 – 40.9 | 41.0 – 45.3 | > 45.3 |
| 60+ | < 20.5 | 20.5 – 26.0 | 26.1 – 32.2 | 32.3 – 36.4 | 36.5 – 44.2 | > 44.2 |

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7. Weight and Waist Circumference

Men: waist circumference **below 36 inches**

Women: waist circumference **below 33 inches**

Can be measured at umbilicus

Implications For:

- Glucose Intolerance - oxidation
- Cardiovascular Disease - inflammation
- Reproductive Organ Cancers – increased estrogen
- Possibly Colon Cancer ?

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8. Bone density

Osteoporosis Incidence:

- 1:4 Women over 50
- 1:8 Men over 50

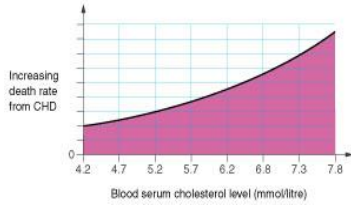
20% of women and over 30% of men die in first year after a hip fracture, usually due to pneumonia

Prevention Involves Primarily:

- Resistance Training and Weight Bearing
- Calcium – 1,000-1500 mg per day (food and/or supplements)
- Vitamin D – blood level at or above 30-35 ng/ml
- Other Factors: Alcohol, Smoking, Underweight, Poor Muscle Development, Low Body Fat – Amenorrhea, Caffeine, Genetics, Magnesium, Zinc, Homocysteine

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Ideal Target 150 mg/dl (3.9 mmol/L);
 Next best target is 180 mg/dL (4.7 mg/dL)



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Foods High In Saturated Fat/Trans-fats and/or Total Cholesterol: raise LDL, inflam, cell division and Platelet stickiness

1. Beef, Lamb, Duck, Pork
2. Organ Meats (high in cholesterol)
3. Milk or Ygurt (2% or higher)
4. Other High Fat Dairy Cheese (4% or higher), Butter, Cream, Ice Cream, Whipping Cream etc.
5. Regular Chocolate Products (Cocoa butter)
6. Palm and Coconut Oil
7. Many High-Fat Pastries- donuts, cakes, muffins, crullers, some pies, icing, etc.
8. Egg Yolks (250 mg of cholesterol per yolk)
9. Mayonnaise, Tahini Sauce, Cream Sauces, Creamy Salad Dressings
10. Deep Fried and Breaded Foods
11. Foods made with Shortenings
12. Butter and Ghee

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Vascular Damage From Homocysteine

- Direct **toxic effects** to the cells that line blood vessels.
- **Degrades** and inhibits formation of three main **structural components of the artery** - collagen, elastin and the proteoglycans.
- Increases tendency for **platelets to clump together** in the bloodstream thus, obstructing blood flow.
- **Stimulates muscle fibers** beneath the blood vessels to grow into the artery, further impairing the flow of blood.

Hyperhomocysteinemia is now considered to be a significant risk factor for stroke, heart attack, and reduced blood flow to fingers, toes and peripheral body parts.

An estimated 10% of cardiovascular deaths per year are associated with high homocysteine

1. [WADA. The Toxic Pathology of Homocysteinemia. Advances in Hematology of Cardiovascular Disease. 2008;16:111-120.](#)
 2. [Dimitrova M, et al. Homocysteine, platelet activation, and thrombosis. Thrombosis and Haemostasis. 2008;108:100-108.](#)

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Common Foods with Insoluble Fiber:

- Wheat bran, Corn bran, Rice bran
- Beans and Peas
- Ground Flaxseeds
- Psyllium Husk Fiber (Metamucil)

Some Common Foods with Soluble Fiber

- Oat bran
- Peas and Beans
- Artichoke
- Ground Flaxseed
- Psyllium Husk Fiber (Metamucil)
- Fruits and Vegetables with Pectin Fiber (apples and citrus fruit with white peel)
- Guar Gum and Pectin

Supplements:

- Gum Guggul – prevents feedback inhibition of 7- alpha hydroxylase and increase LDL clearance by liver
- Artichoke Leaf Extract- increases flushing of bile through biliary tract

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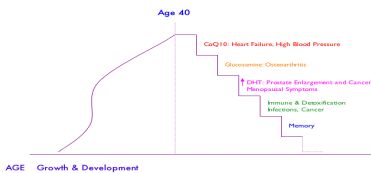
11. Optimize Intake of Anti-cancer Phytonutrients

Key Anti-Cancer Mechanisms In Addition to Antioxidants, Cell Replication Rate, Differentiation, DNA Methylation:

1. Apoptosis
2. Anti-Angiogenesis
3. Immune Modulation and Death Receptor Sensitization
4. Tone Down Mitogen Receptors, Transcription Factors and Mitogen Pathways (Her-2, Insulin and IGF-1, Tyrosine Kinase, PI3K, NFkb, mTOR)
5. Mitophagy

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12. Anti-Aging And Supplements: After Age 40 Genetic Time Bombs Go Off That Can Be Counterred To Significant Degree With Targeted Nutritional Supplements



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Section 2: Theories of Aging

- 1. Telomeres and Hayflick Theory
- 2. Damage Accumulation Theories
- 3. Neuro-Endocrine Clock (Hormonal Decline)

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**Section 3: Anti-Aging Supplements:
Sample of Joint Support Formula:
(amt per capsule)**

- Glucosamine Sulfate – 500 mg
- Quercetin – 100 mg
- Bromelain Enzymes – 100 mg
- MSM – 133.3

Dosage:

- 1-2 per day for prevention
- 3-4 per day for therapeutic purposes

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Nutritional Biochemistry of Inflammation

Principles to Know:

1. Dietary Polyunsaturated fats (PUFA) get incorporated into the phospholipid structure with all cell membranes in the body
2. Phospholipase A2 releases PUFA from phospholipids and converts them into eicosanoids (prostaglandins)- every 15 minutes
3. Different PUFA's form different Eicosanoids, which have profound effects on Inflammation
4. The concentration of individual PUFA's found in cell membrane are a mirror image of dietary PUFA intake.
5. Changing PUFA intake can reduce production of inflammatory and platelet sticking prostaglandins and thromboxane A2, reducing inflammation and CVD risk
6. Half life of PUFA in body structures is 300 days.

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Example of Natural Anti-Inflammatory Supplement (amt. per capsule)

1. Curcumin –200 mg
2. Boswellia (70% boswellic acids) – 200 mg
3. White willow extract (15% salicin) – 33.33 mg
4. Ginger root (5% gingerols) – 50 mg

Dosage: 1-4 capsules, up to three times per day

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Summary: Osteoarthritis Management

1. Exercise (stretch, strengthen and rhythmic activity)
2. Mobilization – chiropractic care
3. Soft Tissue (break up adhesions)
4. Electro-modalities (interferential, electro acupuncture, laser etc.)
5. Anti-inflammatory diet
6. Glucosamine Sulfate Supplementation
7. Essential Fatty Acid Supplementation
8. Antioxidant Enriched Multi-Vitamin
9. Natural Anti-inflammatory Supplement

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CoQ10-Hawthorn-Quercetin Supplement Example

Each Capsule Contains:

1. CoQ10 –30 mg
2. Hawthorn – 37.5 mg (5% flavonoid content) –unique anthocyanidins and proanthocyanidins in berries, leaves and stem.
3. Quercetin – 50 mg

To Keep Heart Strong As You Age:

- By Age 45 – 1 capsule per day
- By Age 60 –2-3 capsules per day
- Statin Drugs – 3 capsules per day
- High Blood Pressure – 2-3 capsules, twice daily
- Dilated Cardiomyopathy – 3 capsules, twice daily (1/3 of all congestive ht failure – males 20-60yrs)

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Immune and Detox Supplement Example:
Starting Around Age 50

Ingredients:

1. Reishi Mushroom Extract –60 mg (std to 10% polysaccharide and 4% terpene content)
2. Astragalus – 200 mg (2:1 extract)
3. Milk Thistle – 300 mg (std. to 80% silymarin)
4. Indole-3-Carbinol–50 mg

Dosage:

1. **Prevention** –1-2 capsules per day (also stops cankers)- by Age 50
2. **At first sign of cold or flu** –8 capsules per day with P73 Wild Oregano Blend
3. **Immuno-compromised states and Cancer** – 4-8 capsules Immuno-Detox Prime, along with other medicinal mushroom, Vitamin D and antioxidant support

Also: 14 Mushroom Blend (www.mushroomharvest.com)

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Example of Memory Support Supplement After Age 55:

- CDP-Choline - 50 mg
 - Phosphatidylserine - 50% grade - 100 mg
 - Huperzine A - 25 mcg
 - Bacopa Monnieri - std to 20% Bacosides content - 50 mg
- (2 caplets per day)

Plus – 2 capsules of Lecithin (1200 mg) = 300 mg of additional Choline.

Plus- Essential Fatty Acids (with DHA)

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Example of Supplement Shown to Decrease PSA and Reverse Prostate Enlargement

Amount Per 2 Capsules:

- Saw Palmetto – 640 mg (std 45% FA & S)
- Pygeum Africanum – 200 mg (std 12% terpenes)
- Beta-sitosterol – 130 mg (cancer cell suicide)
- Soy Isoflavones – 25 mg (used therapeutically to control prostate cancer – cancer cell suicide)
- Stinging Nettle – 60 mg
- Lycopene Powder– 25 mg

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Important Molecules Whose Synthesis Declines With Age

1. Glucosamine
2. Coenzyme Q10
3. 1,25 Dihydroxycholecalciferol – but maintaining 25-hydroxycholecalciferol at 85nmol/L can compensate
4. Acetylcholine –choline transport problem
5. Melatonin
6. Glutathione
7. Alpha-Lipoic Acid
8. L-Carnitine (in certain cases)
9. Skin Hyaluronic Acid
10. Skin Collagen (HA and Matrixyl)

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Age-Dependent Supplementation System For Adults

| Supplement | Up to age 39 | By age 40 | By age 45 | By age 50 | By age55 |
|----------------------------|--------------|-----------|-----------|-----------|----------|
| MV & Min | Yes | Yes | Yes | Yes | Yes |
| Essential Fatty Acids | Yes | Yes | Yes | Yes | Yes |
| Prostate Support | | Yes | Yes | Yes | Yes |
| Glucosamine and anti-inflm | | Yes | Yes | Yes | Yes |
| CoQ, Hawthorn, Quercetin | | | Yes | Yes | Yes |
| Immune-Detox | | | | Yes | Yes |
| Women's Hormonal Support | | | | Yes | Yes |
| Memory support | | | | | Yes |
| Bone Support | Maybe | Maybe | Maybe | Maybe | Maybe |

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Section 4: Other Anti-Aging Supplement Considerations:

1. Melatonin after age 40 (5-HTP, GABA, Melatonin, Bacopa Monnieri)
2. Raising Glutathione (Alpha-lipoic Acid, Milk Thistle, N-Acetylcysteine, L-Glutamine)
3. Creatine Monohydrate – 5-10 gm per day
4. L-Carnitine – 1,000 – 2,000 mg

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Section 6: Further Studies
Fast-track Program For DC's to Become – RNCP/ROHP

IONC – Sanctions Holistic Nutrition Schools across Canada and U.S.
International Organization of Nutritional Consultants (www.ionc.org)

Provide Designation: RNCP/ROHP
Registered Nutritional Consultant Practitioner (RNCP)
Registered Orthomolecular Health Practitioner (ROHP) – higher designation
IONC in discussions with Ontario Government to establish a Registry of IONC Practitioners (like PSW)

Provide Registration Number: Placed on patient receipt and reimbursable via various group health benefit plans outside of DC coverage area (Nutritional Counselling/Health Spending Account/Disability Management)

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GIMA – fast-track, online education program enables DC's (MD, RN other Regulated Health Practitioners) to become RNCP/ROHP

Provides Training And Certification to Become Expert in:

- Advanced Nutritional Medicine (Certificate issued by GIMA)
- Sports Nutrition Specialist (Certificate issued by GIMA)

Takes 8 – 12 months to complete, on average

Format

22 Subjects in Total – 4-6 hours per course of online video instruction
Power Point Slides, narrated by Dr. Meschino
All notes provided on platform
All exams taken online (multiple choice) – at time of your choosing

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ROHP/RNCP-Qualifying Program for Regulated Health Professionals:

Also earns Certificates from the Global Integrative Medicine Academy in: **Advanced Nutritional Medicine And Sports Nutrition Specialist**

Course 1: Essentials of Nutrition and Metabolism and Theories of Aging

- Essentials of Nutrition and Metabolism Part 1
- Essentials of Nutrition and Metabolism Part 2
- Theories of Aging

Course 2: Nutritional Medicine in Neurology

- Brain Development and Neurodegenerative Diseases (Alzheimer's disease, Dementia, Parkinson's, MS, ALS)
- Neuropathies, Concussion, and Nervous System Toxicity, Autism
- Nutritional Medicine and Mental Health Disorders

Course 3: Nutritional Medicine in Metabolic Health Part 1

- Cardiovascular
- Diabetes, Pre-diabetes and Blood Sugar Irregularities
- Arthritis and Autoimmune Diseases
- Osteoporosis

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Course 4: Nutritional Medicine in Metabolic Health Part 2

- Liver Diseases
- Kidney Diseases
- Essentials of Pharmacology
- Blood Tests, Biomarkers and Longevity

Course 5: Nutritional Medicine in Reproductive Health, Weight Management and Sports Nutrition

- Female and Male Reproductive Health Issues
- Sports Medicine Part 1
- Sports Nutrition Part 2
- Weight Management and How to Run a Weight Management Program

Course 6: Nutritional Medicine in Cancer, GI and Functional Assessment

- Adjunctive Nutritional Management of Cancer and Cancer Prevention
- Gastrointestinal Diseases (Celiac, Inflammatory Bowel Diseases, Diverticular Disease, Irritable Bowel Syndrome etc.)
- Nutrition and Lifestyle Medicine Assessment of the Patient and Patient Programming

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Tuition Options: (plus applicable taxes)

1 Payment: \$2,700.00

Or

12 Monthly Payments: \$250.00

Or

24 Monthly Payments: \$137.50

They made it as affordable as possible to enable as many DC's as possible to get this training and expand their expertise and service offering to meet the needs and desires of an increasingly enlightened patient and medical practitioner population, without it being an onerous monthly expenditure.

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Contact Information:

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