

Many Faces of Inflammation

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- Internal Medicine
 - Rheumatology
- Integrative and Holistic Medicine

Focus of Practice

- * Founder of Pennsylvania's only Integrative Rheumatology Center
- * Founder MDNutrics; Nutrition and Wellness Solutions
- * 1 of 4 board certified "Integrative Rheumatologist"
- * Delivering best of both the worlds
- * Caring with Compassion

Financial Disclosure

- * No pharmaceutical company is sponsoring this educational program

Inflammation

- * What is Inflammation
 - * Latin, *īnflammō*, "I ignite, set alight"
 - * Sudden onset of series of reactions
 - * Dilatation of blood vessels
 - * Immune system activation
 - * Influx of cells related to defense
 - * Protective against harmful stimuli
 - * "PRISH" for Pain, Redness, Immobility, Swelling & Heat

Protective or Harmful

- * Inflammatory response requires constant stimulation to set it on fire
- * Questions to ask
 - * Can you identify culprit infection or irritant?
 - * Is it an adaptive versus “maladaptive” response?
 - * Acute versus chronic infection?
 - * Healing or destructive?
 - * Autoimmune origin

Immune System

- * Type: “innate or adaptive”
- * Innate response non-specific likely results in ***inflammation***
- * Adaptive response is very specific for infections
- * **Persistent inflammation = Progressive destruction**
- * Overdrive immune system “ chronic inflammation, autoimmunity”; self destruction and diseases

Have you heard?

THE WALL STREET JOURNAL. | LIFE & CULTURE

THE INFORMED PATIENT

The New Science Behind America's Deadliest Diseases

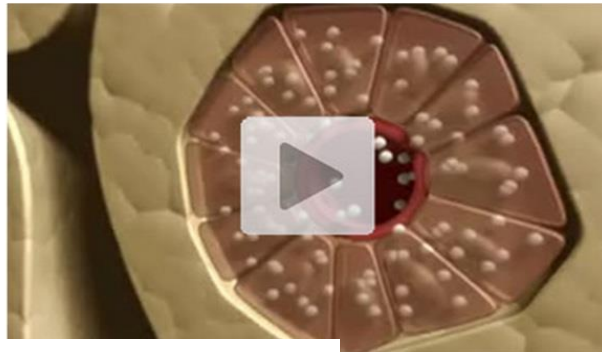
What do heart disease, diabetes, Alzheimer's, stroke and cancer have in common? Scientists have linked each of these to a condition known as chronic inflammation, and they are studying how high-fat foods and excess body weight may increase the risk for fatal disorders.

Silent Enemy Within



Chronic Inflammation: Reduce It to Protect Your Health

Inflammation is linked to diabetes, depression, heart disease, and cancer; what you can do about it.



The Secret Killer



Do I have Inflammation ?

- * Obvious or Silent
- * Signs of inflammation come from Latin
 - * Dolor (pain)
 - * Calor (heat)
 - * Rubor (redness)
 - * Tumor (swelling)
 - * Functio Laesa (loss of function)
- * Fatigue, Morning Stiffness, Joint Pain

Inflammation and Pain

- * Pain is a very individual experience
- * Swelling pushes against the sensitive nerve endings
- * Nociceptive pain; receptors for temperature, vibration, stretch and chemicals on nerves
- * Somatic pain; receptors for stretch, vibration, temperature in muscles & joints

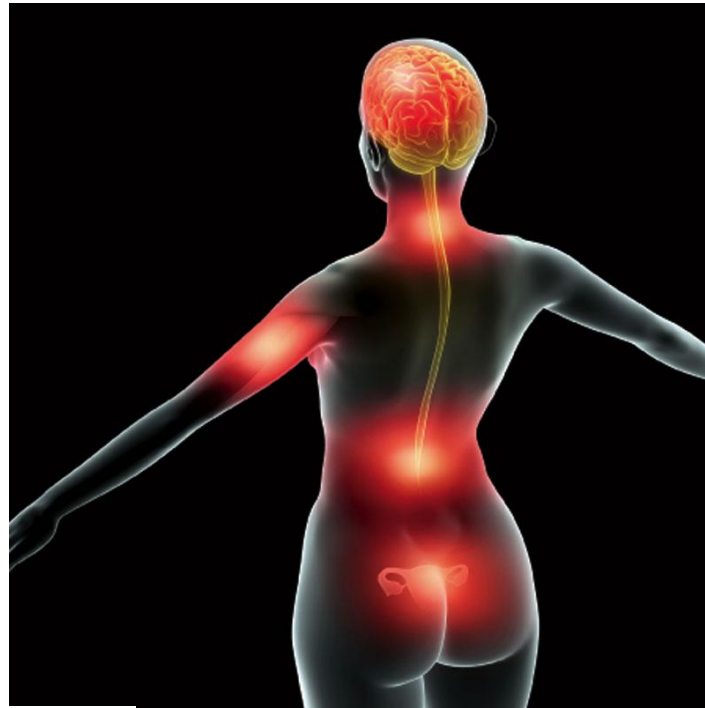
Pain and its effects



Understanding Pain

- * Visceral pain; receptors in organs sense oxygen starvation (ischemia), stretch, and inflammation
- * So, Your pain is *Unique* because *U* are !
- * Biochemical processes during inflammation affect how nerves behave and cause pain
- * Develops a state where mind is constantly aware of pain due to hyperactivity of pain receptors

Pain and Central Connection



Inflammatory down spiral

- * *From Stress to Inflammation and Major Depressive Disorder:Theory of Depression.* [Psychol Bull.](#) 2014 Jan 13
- * *Pro-inflammatory conditions promote cancers and autoimmune disorders*
- * *Overlap of depression with inflammatory conditions, metabolic syndrome, cardiovascular disease, obesity and Alzheimer's*
- * *Fibromyalgia linked to chronic pain and autoimmune diseases*

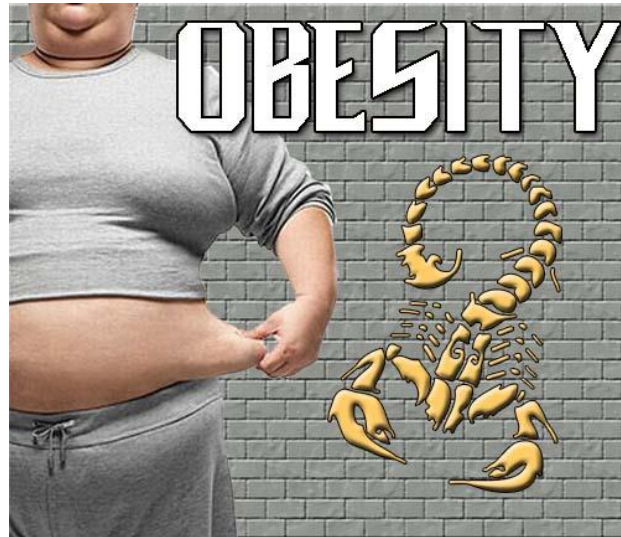
Pro-Inflammatory States

- * Obesity and Metabolic Syndrome
- * Sleep Disorders, Sleep Apnea
- * Inflammatory Diet
- * Salt content
- * Vitamin D Deficiency
- * Sedentary lifestyle
- * Emotional and Physical Stress

Pro-Inflammatory States

- * *“Obesity, metabolic syndrome and sleep apnoea: all pro-inflammatory states”* ; *Obesity Reviews* March 2007
- * *“Adipose tissue produces a vast number of molecules called adipokines such as leptin, tumoral necrosis factor (TNFalpha);*
[Rev Med Univ Navarra](#). 2004 Apr.
- * *Obesity and psoriasis: inflammatory nature of obesity... responsible for metabolic syndrome and cardiovascular disease through ... proinflammatory adipokines;* [Actas Dermosifiliogr](#). 2014 Jan-Feb

Many faces of inflammation



Pro-Inflammatory States

- * *Sleep quality and duration impacts on inflammation risk;* Medical News Today
- * *Sleep deprivation or poor quality of sleep raises inflammation, which in turn increase the risk of developing heart disease and stroke.* Emory University School of Medicine
- * Poor Sleep linked increased nociceptive pain receptor stimulation and incidence of Fibromyalgia

Pro-Inflammatory States

- * *“The diet-induced pro-inflammatory state: a cause of chronic pain and other degenerative diseases”* [J Manipulative Physiol Ther.](#) 2002 Mar-Apr
- * *Pro-Inflammatory Diet Linked to Earlier Death;* American Institute for Cancer Research
- * Inflammatory index of foods and nutrients is the basis of interventional nutrition
- * *Vitamin D3 deficiency results in dysfunctions of immunity with severe fatigue;* In Vivo 2014 Jan

Many Faces of Inflammation

* Aging

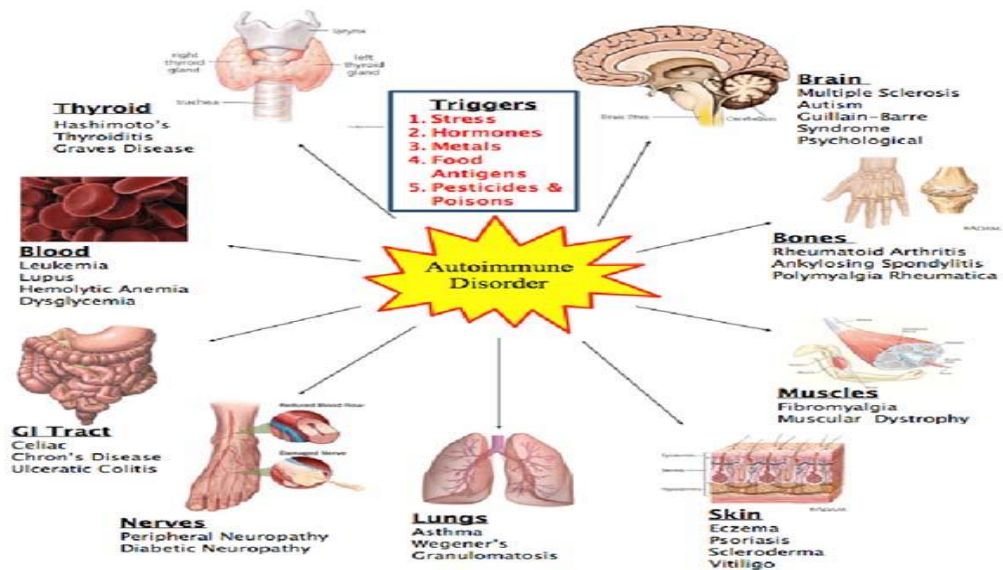
- * “Inflammation is an underlying culprit behind virtually all age-related diseases”
- * “Aging destroys the delicate balance between destructive and protective inflammatory responses” *Life Extension*
- * Aging and Inflammation are self propelling phenomena
- * “achy joints and swollen feet on the outside, is also wreaking havoc on your insides” *Huffington Post*

Autoimmune disorders and inflammation

- * Misdirected and overdriven immune response triggers an inflammatory response
- * Rheumatoid arthritis - there is inflammation in the joints, tissues
- * Ankylosing Spondylitis - inflammation of the vertebrae, muscles, ligaments
- * Celiac Disease - inflammation and destruction of the inner lining of the small intestine

Inflammation & Autoimmunity

Tissues Affected by Autoimmunity



Evolution of Nutrition

- * Refining Process; loss of fiber and micronutrients
- * Western diet
 - * 75% decline in fiber
 - * 5 fold increase in sugar
 - * 4 fold increase in fats
- * Earlier human consumption; omega-6s and omega-3s
- * Today's diet : 14-25 x omega-6 vs. omega-3

Overfed and Undernourished

- * “Snack” and “fast” food: high fat, high fructose
- * Increase calorie, decreased essential nutrients
- * 60% Americans: high waist/hip ratio (WHR) and BMI
- * Alarming rates of diabetes, cancer, metabolic syndrome, heart and autoimmune diseases are linked to western diet

Nutrition and Autoimmunity

- * Inflammation and immune dysfunction starts in the intestinal track
- * Presence of antibodies of intestinal bacteria like *Proteus mirabilis* linked to RA
- * Organic vegetables and fruits reduce irritants & antigens
- * Mediterranean style diets have proven anti-inflammatory effects

Detecting inflammation

- * Biomarkers and Antibodies by blood tests
- * Acute phase reactants; C-Reactive Protein (CRP), ESR
- * ANA, RF, anti CCP, LDL, homocysteine level
- * *Vitamin D Deficiency Is Associated With Inflammation in Older Irish Adults;* [J Clin Endocrinol Metab.](#) 2014 Feb 25

Rheumatoid arthritis

- * 1% of US population
- * Affects women more than males
- * Genetic makeup and environmental triggers, smoking and gingival infection
- * Anti inflammatory diet and complementary therapy can be of immense help along with modern treatment



Osteoarthritis



Treating Inflammation

- * Conventional and Integrative approaches
- * Pharmacologic: NSAIDs, Steroid, DMARDs, Anti TNF
- * Integrative Steps
 - * Nutritional intervention
 - * Herbs and supplements
 - * Sleep Hygiene
 - * Lifestyle coaching
 - * Mind Body Intervention; Reiki
 - * Manual therapies, massage, Tai chi

Nutritional Interventions

- * Identify triggers and elimination
- * Anti inflammatory Nutrition; *Inflammatory Factor*
- * Omega 3 rich food
- * Vitamin D
- * Herbal supplements
- * Antioxidants
- * Probiotics

Inflammatory Triggers

- * Nutritional Interventions vastly ignored
- * You may try to reduce or eliminate culprits
 - * Dairy products
 - * Animal based fats and proteins
 - * Wheat
 - * Nightshade vegetables (bell pepper, eggplant, tobacco, tomato, and white potato) may be culprits
 - * Eliminate and gradual re-introduction

Omega 6 versus Omega 3

* Omega-6 fats

- * promotes inflammation
- * constriction of vessels
- * formation of blood clots

* Omega-3

- * anti-inflammatory
- * relaxes blood vessels
- * protects against blood cells aggregating
- * prevents clots

Heart Health Fats

- * Coconut , canola, or olive oil - extra virgin is the best
- * Flax seeds and oil, sardines, ocean salmon, and walnuts
- * GLA : has anti inflammatory properties; evening primrose, borage and black currant
- * Supplement 2-4 grams of high EPA/DHA fish oils



Anti-Inflammatory Protein

- * Limit red meat or free-range, grass-fed beef or lamb
- * Avoid charring/browning proteins/meats
- * Avoid lunch meats with nitrites
- * Free-range eggs , avoid browning
- * Nuts and seeds (pumpkin, sunflower), nut butters
- * Soy products
- * Milk substitutes; soy, rice, almond, or oat milk

Antioxidant Boost

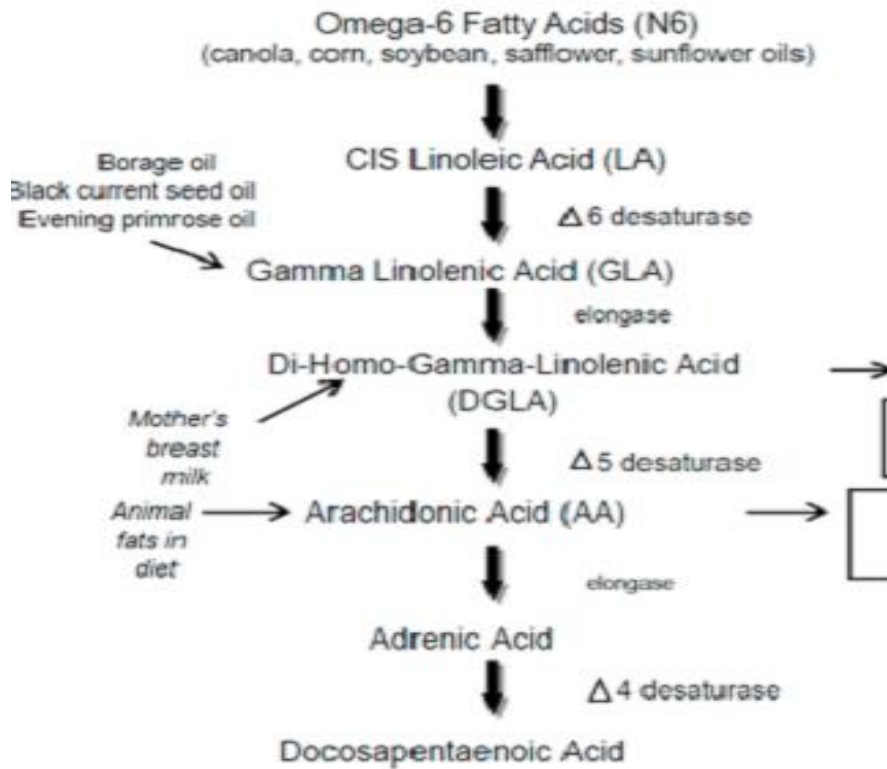
- * Lightly cooked dark leafy greens (spinach, collard greens, kale, Swiss chard)
- * Cruciferous vegetables (broccoli, cabbage, brussels sprouts, kale, cauliflower)
- * Carrots, beets, onions, peas, squashes, sea vegetables and washed raw salad greens



Omega 3-Essential Fatty Acids

- * Humans are unable to synthesize these fatty acids
- * Polyunsaturated, meaning they will be liquid rather than solid at room temperature
- * Linoleic acid belongs to the family of *omega-6* fats and is readily available
- * Linolenic acid belongs to *Omega-3* fats

Good vs. Bad Omega 6



- * Avoid animal fats
- * Evening primrose oil contains GLA; anti inflammatory
- * Oils of evening primrose, borage and black currant
- * Dose 1.5-3g/day

Omega 3

- * Remember EPA and DHA
- * Produce *resolvin* which is anti inflammatory
- * Clinical trials in RA, Lupus and Ankylosing spondylitis
- * Improved patient reported pain, morning stiffness, number of painful and tender joints
- * Average recommended dose , EPA 30mg/kg, DGA 50mg/kg or total 3.5g/day

Omega 3 Sources

- * Extra virgin olive oil
- * Expeller-pressed organic canola oil
- * Walnuts, Almonds and hazelnut oils in salads
- * Avocados, freshly ground flaxseed.
- * Cold water fish; wild Alaskan salmon, sardines
- * EPA and DHA supplements

Anti-Oxidants

- * Inflammation leads to reactive oxygen radicals
- * Oxidative damage to the joint and cartilage
- * Antioxidants defend against degeneration
- * Prevent and relieve pain in RA and OA
- * Vitamin E & C
- * Selenium, Quecertain, Resveratrol

Vitamin D, an Immune Player

- * Proven association with RA, SLE and Osteoarthritis
- * *Vitamin D and systemic lupus erythematosus: state of the art... disease onset and evolution;* [Clin Rheumatol.](#) 2014 Feb
- * Framingham study: 3x risk of Osteoarthritis
- * *“Clinical relevance of optimizing vitamin d status in soldiers to enhance physical and cognitive performance”* [J Spec Oper Med.](#) 2014 Spring

Vitamin D and Inflammation

- * *Low vitamin D levels associated with more Lupus flares*
- * *“Inflammatory processes involved in disease ... reduce” vitamin D level.*
- * *Iowa women health study “ lower levels of vitamin D associated with higher risk of developing RA and activity”*
- * *Vitamin D deficiency associates with quadriceps weakness... in **knee osteoarthritis*** [Redox Biol.](#) 2014 Feb 19

Herbs and Spices

- * Natural anti-inflammatory agents
 - * Turmeric
 - * Ginger
 - * Garlic (dried and fresh)
 - * Black Pepper
 - * Basil
 - * Coriander
 - * Cinnamon

Turmeric (Curcumin)

- * Clinical trial has shown efficacy similar to Nsaids
- * Powdered root, 500mg-1000mg, 2-3x/day



Ginger

- * Anti inflammatory herb can help with pain, swelling and stiffness in OA
- * *Study of 261 people, 63% experienced relief of knee pain*
- * Efficacy in RA by inhibiting inflammation
- * Dosage powdered root 500-1000mg/day or as tea



Boswellia

- * Inhibits the synthesis of pro inflammatory chemicals
- * It is suggested to have efficacy in OA
- * *A study of 30 patients with knee OA found improvements in pain and walking distance*



Poor Sleep and Inflammation

- * *“Poor sleep prevalent in ... rheumatoid arthritis and increased risk of ..mortality”* [BMC Musculoskelet Disord.](#) 2014 Feb
- * *“Sleep disorders seen in more than half of SLE patients; associated with disease activity”* [Lupus.](#) 2014 Feb
- * Poor sleep linked to widespread pain. Restorative sleep essential to maintain health
- * Depression, anxiety, fatigue linked with poor sleep

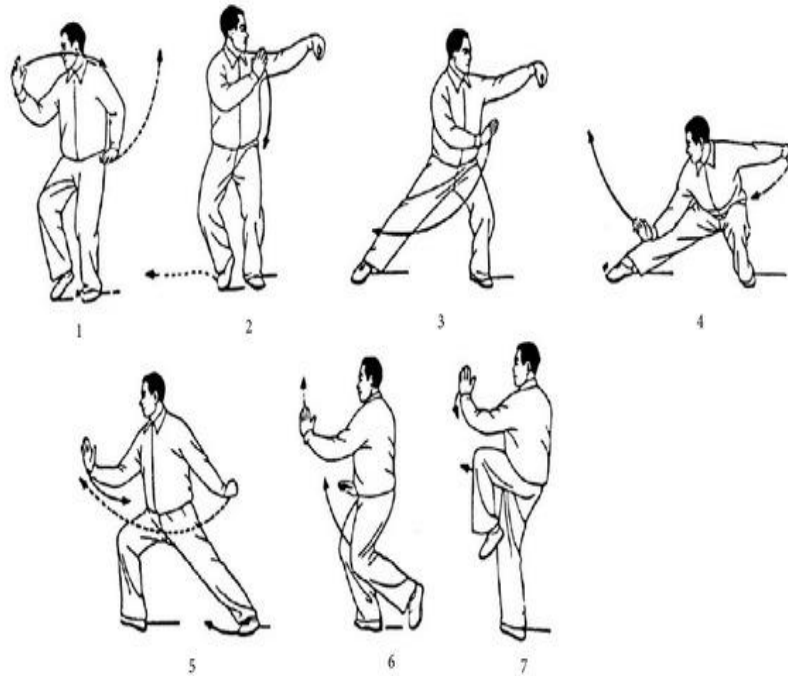
Exercises and Inflammation

- * *“Exercise training... improves metabolic and inflammatory status in skeletal muscle of aged men”* [J Physiol.](#) 2014 Mar
- * *“Exercise as a therapeutic tool to counteract inflammation and clinical symptoms in autoimmune rheumatic diseases”* [Autoimmun Rev.](#) 2012 Dec

Tai Chi & Yoga

- * Tai Chi is safe and effective for rheumatologic disease and orthopedic diseases
- * *“Yoga therapy may help individuals with RA manage stress and increase well-being”* [Int J Yoga Therap.](#) 2013
- * *Yoga for functional ability, pain and psychosocial outcomes in musculoskeletal conditions; safe and effective* [Musculoskeletal Care.](#) 2013 Dec

Tai Chi



Yoga



Hope and Optimism

- * *“Higher overall optimism scores were associated with lower levels of inflammation”* [Psychosom Med.](#) 2011 Oct
- * *“Pessimism is related to higher levels of inflammation”* [Psychosom Med.](#) 20
- * *“Optimism may promote health, by counteracting stress-induced increases in inflammation and boosting the adjuvant effects of acute stress”* [Brain Behav Immun.](#) 2009 Aug;

Relaxation Response (RR)

- * *“Relaxation response induces brain chemical changes in energy metabolism, insulin secretion and inflammatory pathways”*
- * Practices evoking the RR include meditation, yoga and repetitive prayer
- * RR “counteracts the adverse clinical effects of stress, hypertension, anxiety, insomnia and aging” [PLoS One](#). 2013

May

www.RheumPA.com

The screenshot shows the homepage of Rheumatology Care Consultants. At the top left is the logo featuring a stylized hand holding a joint, with the text "Rheumatology Care Consultants" in blue and gold. To the right of the logo are social media icons for Twitter, Facebook, LinkedIn, YouTube, a medical cross, RSS, and a mobile phone icon, with the text "Follow us:" above them. Below the logo are four service icons: "Call for Appointments: (267) 685-6070", "Fax: 300-8112 1-888-", "Online Appointment", and "Online Referral". The main content area has a blue background with a yellow and blue rainbow graphic. On the left, the text "Rheumatoid Arthritis" is displayed in white, followed by a paragraph: "Rheumatoid arthritis is a chronic inflammatory disease in which the lining of the joints become inflamed, causing pain, swelling, and stiffness" and a "Read more" link. On the right, a smiling woman in a grey dress is shown with her fists raised in a gesture of strength or triumph. Surrounding her are several circular images showing various joints affected by arthritis, such as a foot, a hand, and a knee. A yellow callout box with the text "Rheumatoid Arthritis" is positioned near the bottom of the rainbow graphic. At the bottom of the page is a navigation bar with orange and white segments containing the links: Home, Our Practice, Patient Info, Services, Appointments, FAQs, Contact Us, and a search bar.

www.MDNutrics.com

The screenshot shows the MDNutrics.com website homepage. At the top, there is a navigation bar with links for "Sign In", "Register", and "My Cart (0)". Below this is a search bar. The main navigation menu includes "HOME", "HEALTH CONCERNS", "HEALTHY LIFESTYLE", "WHY MD NUTRICS?", and "CONTACT US". On the left side, there is a "PRODUCTS & SERVICES" menu with categories like "Heart and Cholesterol", "Joint and Arthritis", "Sleep Health", "Thyroid and Adrenal", "Diabetes Care", "Immune Inflammation", "Fibro Pain Care", "Bone Density", "Mood and Anxiety", and "Fatigue Care". The central content area features a promotional banner for "INNATE RENEWAL GREENS Professional Strength Greens" with a "Nutritional interventions" section. To the right of the banner are four promotional buttons: "WHAT IS PHYSICIAN GRADE?", "SAVE NOW! SPECIAL PACKAGES", "VITAMIN GUIDE VIEW OUR SELECTION", and "10% OFF ON ORDERS OVER \$250". Below the banner, there is a "Welcome to MDNutrics.com" section with a paragraph of text.

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- Diabetes Care
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- Fibro Pain Care
- Bone Density
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Rheumatology Care
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Dr Farhan Tahir MD, FACP ; Integrative Rheumatologist
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* Best of Health and Joyful Spring