

# Oral & IV Nutritional Therapy in a Regenerative Medicine Clinic

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# Chronic Diseases

- Chronic diseases affect more than 90 million Americans, accounting for **70% of all deaths** and 75% of national medical care costs.
- In 2005, nearly **one of every two American adults had at least one chronic illness.**
- *Centers for Disease Control and Prevention. Chronic Diseases and Health Promotion.*  
<http://www.cdc.gov/nccdphp/overview.htm>

# INFLAMMATION—the silent killer



# DISEASE & INFLAMMATION



- Research continues to indicate that *chronic inflammatory processes* may be the **root** of many health problems.
- Strongly linked to DM, CAD, Chronic Pain, Depression/anxiety, Psoriasis, Asthma/Allergies, Obesity, and AD, etc.

# Meta-Inflammation

- When it becomes chronic or systemic, ***the inflammatory process itself becomes the disease.***
- ***Meta-inflammation***, has been coined to describe chronic, low-grade, metabolically induced inflammation.
- It uses the ***same molecules and signaling pathways as classic inflammation.***
- Hotamisligil G.S.: Inflammation and metabolic disorders. *Nature*. 444:860-867 2006

# BIOMARKERS & INFLAMMATION

Biomarkers of Inflammation:

- CRP
- IL-6, 10, 18
- MCP-1 (monocyte chemoattractant protein-1)
- TNF alpha
- **Appears to be a link between biomarkers, inflammation and disease**



# TRIGGERS of INFLAMMATION

- **American diet (SAD)**
- **Trauma, mechanical stress, pain**
- **Obesity, DM, CAD**
- **Genetic factors and polymorphisms**
- **Food allergies, toxins, heavy metals**
- **Gut dysbiosis, SIBO, mal-digestion/absorption**
- **Fungal infection**
- **Prescription drugs, OTC' s, Recreational drugs/Alcohol**
- **Aging, hormone deficiencies**
- **Lack of exercise and sleep**



# DIET & INFLAMMATION



- Diets with low glycemic index, high antioxidants (vitamin E, carotenoids) correlate inversely with biomarkers of inflammation.

*Brighenti F., Valtuena S., Pellegrini N.: Total antioxidant capacity of the diet is inversely and independently related to plasma concentration of high-sensitivity C-reactive protein in adult Italian subjects. Br J Nutr. 93:619-625 2005*



# FOOD ALLERGY & INFLAMMATION

- 60 migraine sufferers who completed a 5-day period of withdrawal from their normal diet (subjects consumed lamb, pears and bottled water), the most common reactive foods were wheat in 78%, orange in 65%, eggs in 45%, tea and coffee in 40% each, chocolate and *milk* in 37% each, beef in 35% and corn, cane sugar and yeast in 33% each upon challenge.
- *With the avoidance of 10 common foods, there was a dramatic reduction in the number of headaches per month, with 85% becoming headache-free.*
- 25% of the subjects with hypertension became normotensive
- *Food Allergies and Migraine, Lancet. 1979 May 5;1(8123):966-9.*



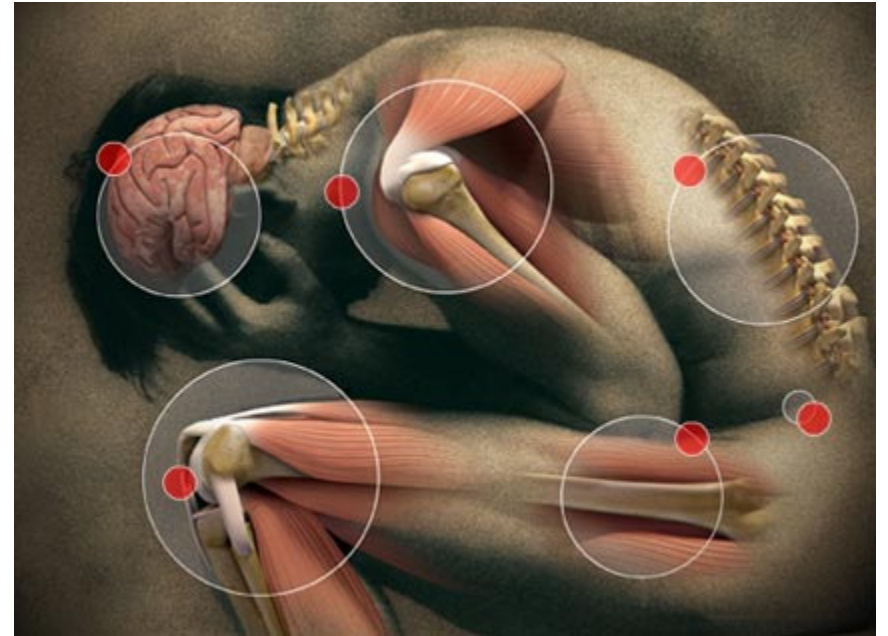
# THE DRUGGING of AMERICA

## How we put the fires out—or do we?



- **186,000 deaths each year as a result of iatrogenic injury.**
- **The FDA states that 1.3 million people are injured each year due to medication errors.**  
( Reference : Food and Drug Administration (FDA) website, [www.fda.org](http://www.fda.org) )
- **One in five Americans (22%) report that they or a family member have experienced a medical error of some kind.**

# INFLAMMATION & PAIN



- **Regardless of your method of practice, *PAIN* will often be the motivating factor for most patients who consult physicians.**

# WHAT CAUSES PAIN?



- **Multifactoral Triggers**
  - Structural
  - Visceral-Somatic & Somatic-Visceral Reflexes
  - Functional Endocrine Disturbances
  - Impaired Hepatic-Renal Detox
  - Nutritional Deficiencies
  - SIBO, Fungal, Mycobacterium Stressors
  - Food, Environmental & Chemical Allergies
  - Toxic Overload

# **CHRONIC INFLAMMATION & MEDICAL SPECIALTIES**

- **Neurology: MS, AD, PD, Migraine, CRPS**
- **Rheumatology: RA, Lupus, OA, CTD**
- **GI: IBS, IBD, GERD, Gastritis**
- **Derm: Eczema, Psoriasis, Fungal**
- **Cards: CAD, CHF, Hyperlipdemia**
- **Optho: MD, Cataracts, Uveitis,**
- **ENT: Rhinitis, sinusitis, Allergy, Tinnitus, Vertigo**
- **Pulmonary: Asthma, COPD, Bronchitis**
- **Chiropractic: MSK, Systemic Disease**
- **Dental Medicine: Migraine, MSK, TMS, Systemic Disease**
- **Family Medicine: Chronic pain, all of the above**



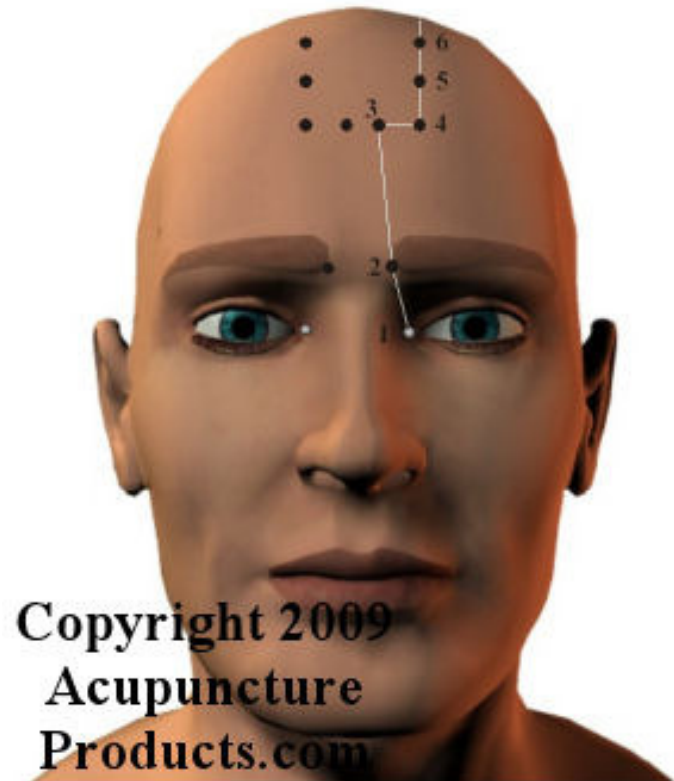
# Where is the Inflammation?



- Think where is the pain located?
- What is the spinal segment involved?
- What meridian lives there?
- What organ commonly refers?
- *Look for patterns of inflammation*

# PATTERNS OF INFLAMMATION

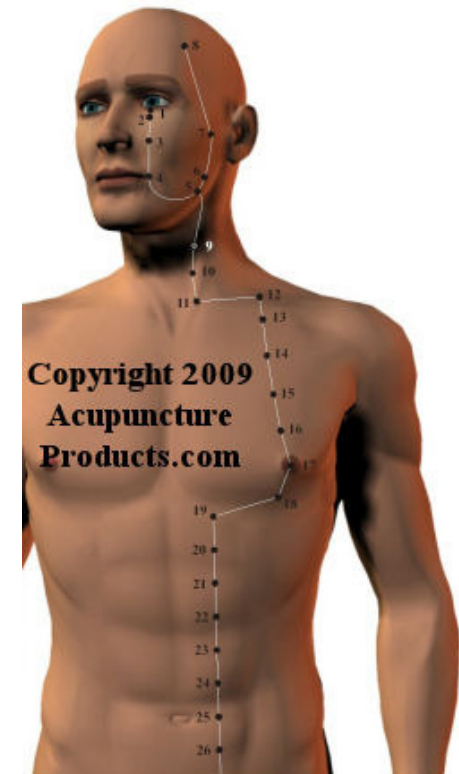
- Frontal Headaches
- Chronic Sinus
- Visual Changes
- Facial Pain
- Bladder Meridian
- Stomach Meridian



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# INFLAMMATION PATTERNS

- Facial & Frontal Head Pain
- “Sinus Headaches”
- Food Allergy Headaches
- HCL Deficiency
- GERD & Mid back pain
- Dental Stress
- Stomach Meridian





# IV micronutrient therapy

- **Members from diverse medical groups use these protocols:**
- The American Academy of Environmental Medicine (AAEM)
- The American Academy of Anti-Aging Medicine (A4M)
- The American College for Advancement in Medicine (ACAM)
- The American Association of Naturopathic Physicians(AANP)
- The American Holistic Medical Association (AHMA)
- The American Academy of Pain Management (AAPM)
- The Great Lakes College of Clinical Medicine (GLCCM)
- The International Society of Orthomolecular Medicine (ISOM)

# Higher Serum Concentrations

- IV administration of nutrients achieves serum concentrations much higher than those achieved by oral or IM administration
- Highest serum dose achieved after oral administration of pharmacological dose of vitamin C is 9.2 mg/dL. IV administration of 50 g/day of vitamin C resulted in a mean peak plasma level of 80 mg/dL

# Correcting Intracellular Nutrient Deficits

- Higher intracellular nutrient concentration necessary in some cases to maintain proper cellular function
- E.g. Magnesium concentration 10 times higher in myocardial cells as compared to extra-cellular concentrations
- in certain disease conditions cell membrane capacity to maintain high concentrations may be compromised
- IV administration of Mg may lead to a significant though transient increase in Mg levels

# Myers' Cocktail

- **Treatment pioneered by John Myers, MD – a physician from Baltimore**
- **Myers did not leave any published or print material on the composition of the IV treatment**
- **It appears that he used a combination of magnesium chloride, calcium gluconate, thiamine, vitamin B6, vitamin B12, calcium pantothenate, vitamin B complex, vitamin C, and dilute hydrochloric acid**
- **Current formulations have been modified to by Dr. Alan Gaby who took over care of Dr Myers' patients after his death in 1984**

# “Myers’ Cocktail” Indications

- Asthma
- Migraines
- Chronic Fatigue Syndrome
- Fibromyalgia
- Muscle Spasm
- Coronary Artery Disease
- Upper Respiratory Infections
- Chronic Sinusitis and Allergic Rhinitis

# The Myer's Cocktail

- Myer's Cocktail Composition-

- Magnesium chloride hexahydrate (20%) 5 ml
- Calcium gluconate (10%) 3 ml
- Hydroxocobalamin (1,000 mcg/ml) 1 ml
- Pyridoxine hydrochloride (100 mg/ml) 1 ml
- Dexpanthenol (250 mg/ml) 1 ml
- B-complex 100 1 ml
- Vitamin C (500 mg/ml) 5 ml
- Sterile Water 20 ml

## Myer's Composition, cont.

- B-Complex 100 contains the following per each ml:
  - Thiamine HCl 100mg
  - Riboflavin 2mg
  - Pyridoxine HCl 2mg
  - Panthenol 2mg
  - Niacinamide 100mg
  - Benzyl Alcohol 2%

# Magnesium

- ***Deficiency is widespread but under-detected***
- Involved with > 350 enzyme systems
- Required for metabolized **vitamin D** products to be maintained in circulation.
- **B<sub>6</sub>** increases the **influx of Mag** into the muscle cell.
- Intracellular cation, so **RBC magnesium** is test of choice

*King D.E., Mainous A.G., Geesey M.E.: Dietary magnesium and C-reactive protein levels. J Am Coll Nutr. 24:166-171 2005*



# Magnesium Indications

- **Back pain, muscle spasms, MS, depression, epilepsy, DM, tremor, PD, arrhythmias, CVD/CAD, hypertension, migraine, cluster headache, PMS, abdominal pain, constipation, osteoporosis, asthma, stress-dependent disorders, tinnitus, ataxia, confusion, and spasms**

*Associations of dietary magnesium intake with mortality from cardiovascular disease: the JACC study," Zhang W, Iso Atherosclerosis 2012 April, 221(2): 587-95.*

# IV Mag & Migraine

- Beneficial effect of IVMT in treatment of migraine has been demonstrated in some clinical trials
  1. Mauskop A, Altura BT, Cracco RQ, Altura BM. Intravenous magnesium sulphate relieves migraine attacks in patients with low serum ionized magnesium levels: a pilot study. *Clin Sci* 1995;89:633-636.
  2. (29.) Demirkaya S, Vural O, Dora B, Topcuoglu MA. Efficacy of intravenous magnesium sulfate in the treatment of acute migraine attacks. *Headache* 2001;41:171-177.
  3. (30.) Mauskop A, Altura BT, Cracco RQ, Altura BM. Intravenous magnesium sulfate relieves cluster headaches in patients with low serum ionized magnesium levels. *Headache* 1995;35:597-600.

# IV Magnesium & Asthma

- Standard of care in ED for acute asthma exacerbations.
- Inverse associations btw intracellular magnesium levels and asthma severity.

*Cete Y, Dora B., Ertan C.: et al. A randomized prospective placebo-controlled study of intravenous magnesium sulphate vs. metoclopramide in the management of acute migraine attacks in the emergency department. Cephalalgia. 25:199-204 2005*

*"Magnesium Treatment for Asthma: Where Do We Stand?" Noppen M, Chest, August 2002;122(2):396-398.*

# IV Magnesium Push

- **MAGNESIUM PUSH**

- Indications: For patients with hypertension, cardiac arrhythmia, migraines or muscle spasms.

<b><i>Ingredients</i></b>	<b><i>Amount</i></b>	<b><i>Volume (cc)</i></b>	<b><i>mOsm</i></b>
Magnesium Sulfate (50%)	3g	6	24.36
Vitamin B6 (Pyridoxine)	300mg	3	2.9177
<b>Total</b>		<b>9</b>	<b>27.2777</b>

- **Give as SLOW push; Osmolarity is 3030.8566 mOsm/L**

- Inform patient that they may experience
- Warmth throughout the body
- Slight ache in arm where insertion site is
- Tingling of the lips
- Sweating

- **GIVE IV PUSH SLOWLY**

- For 1<sup>st</sup> time patients, push 0.5 – 1 cc at a time and wait a minute or two between pushes.
- Have patient keep you informed of how they are feeling
- If patient is feeling lightheaded or dizzy, wait until feeling has passed before going on.

# Glutathione

- Primary cellular defense against free radicals.
- Functions both as an ***antioxidant*** (in the form of glutathione peroxidase) and as a ***detoxifying agent*** for many xenobiotics.
- ***Most effective way of increasing levels is IV***

# Glutathione Clinical Indications

- ***“Failure to detoxify”*** is common thread
- FM/CFS/MCS/EMFS
- Auto-Immune diseases including Lyme
- Chronic Inflammation
- Liver, gut (SIBO), kidney disease
- Toxic Metal Syndrome
- Neurogenic inflammation: “brain fog”, MS, Dementia, PD, neuropathies, “chemo brain”

# IV Glutathione protects Neurons

- ***50% less glutathione (GSH) in the substantia nigra of Parkinson's patients***
- GSH 600 mg IV bid x 30 days
- ***42 % decline in disability & continued effect 2-4 months after stopped***
- Protects both telomeres and mtDNA

Perry TL, et al. Idiopathic Parkinson's disease: A disorder due to nigra glutathione deficiency. Neuroscience Letter 1986;67:269-74

Sechi G, et al. Reduced intravenous glutathione in the treatment of early Parkinson's disease. Prog Neuropsychopharmacol Biol Psychiatry 1996;20:1159-70

Johnson WM, et al. Dysregulation of glutathione homeostasis in neurodegenerative diseases. Nutrients. 2012 Oct 9;4(10):1399-440. doi: 10.3390/nu4101399.

# IV Glutathione Rx

- Dose: **600 to 800 mg** IV diluted in 20ml SW infused over 15-20 min, 2-3x/wk
- Push: 1-2 grams IV post “Myer’s Cocktail” is a common dose once established on glut
- Precautions: Rapid infusion can provoke respiratory distress, coughing, rhinorrhea, and vertigo.
- Common clinical outcome: increased energy, improved memory



# Curcumin

- **Anti-inflammatory, Anti-neoplastic, Anti-depressant**
- **Combination of curcumin and phosphatidylcholine improves absorption of curcumin**
- **Curcumin appears to bind to the vitamin D receptor and work *synergistically with vitamin D***

*"Curcumin for the treatment of major depression: A randomized, double-blind, placebo controlled study," LoPresti AL, Maes M, et al, J Affect Disord 2014 Jun 11; 167C: 368-375.*

# CURCUMIN and Performance

- A randomized, placebo-controlled trial involving 20 healthy, moderately active volunteers.
- Dose: (200mg curcumin b.i.d.), or matching placebo
- Dose was initiated 48 hours prior to a downhill running test and was continued for 24 hours after the test (4 total days)
- It was found that a phytosome delivery system for curcumin (Meriva), had ***significant impact on reducing delayed onset muscle soreness (DOMS)***

*"Reduction of delayed onset muscle soreness (DOMS) by a novel curcumin delivery system (Meriva): a randomized, placebo-controlled trial", Drobnic F, Riera J, et al, J Int Soc Sports Nutr 2014 Jun 18; 11:31.*

# Curcumin and DOMS

- ***Significantly fewer subjects in the curcumin group had MRI evidence of muscle injury*** in the posterior and medial compartment of both thighs.
- Increases in markers of muscle damage and inflammation tended to be ***lower in the curcumin group***
- Authors: ***"curcumin has the potential for preventing DOMS as suggested by its effects on pain intensity and muscle injury"***

# Curcumin Pain & Depression

- Rats induced with "***pain-depression***" via ***reserpine*** (which led to a significant decrease in nociceptive threshold, **decreases in biogenic amine levels (dopamine, norepinephrine, and serotonin), and increased substance P, nitroxidative stress, inflammatory cytokines**)
- Administration of **curcumin** (100, 200 300 mg/kg) was found to be ***associated with dose-dependent ameliorations in the behavioral deficits associated with pain and depression***
- These results suggest that **curcumin may play a role in treating pain and depression - two conditions that are commonly found in the same patients.**

# CURCUMIN and Neuropathy

- *"Curcumin Attenuates Diabetic Neuropathic Pain by Down regulating TNF-alpha in a Rat Model," Li Y, Zhang Y, et al Int J Med Sci, 2013; 10(4): 377-81.*
- The authors conclude, **"Curcumin seems to relieve diabetic hyperalgesia, possibly through an inhibitory action on TNF-alpha and TNF-alpha receptor 1."**

# Curcumin, RA and Pain Meds

- ***"A Randomized, Pilot Study to Assess the Efficacy and Safety of Curcumin in Patients with Active Rheumatoid Arthritis," Chandran B, Goel A, Phytother Res, 2012 Mar 9***
- ***45 subjects diagnosed with **active rheumatoid arthritis (RA)**, treatment with curcumin (500 mg/d) was found to be more effective than treatment with diclofenac sodium (50 mg/d) in reducing symptoms of joint swelling and tenderness.***
- ***Authors conclude that curcumin may be more effective than the drug, diclofenac sodium, for patients with active RA.***

# CURCUMIN IV Rx

- Test dose at 1 to 10 mg/Kg IV on the first day [1]
- Subsequent doses could increase to 40 mg/Kg if tolerated two to three times weekly
- Carrier solutions:
- Dextrose 5% in Water (D5W) 250 or 500 mL carrier solution
- 0.9% normal saline may be an appropriate choice based on compounding pharmacy
- Rate of administration: 10 mg/min max until tolerance is established

*Anand P, et.al. Curcumin and cancer: An “old-age” disease with an “age-old” solution. Cancer Letters 267 (2008) 133–164*

# IM Vitamins

- B12: 1-5 gr IM
- Vitamin D3: 50,000 units IM
- Magnesium: 250 mg IM
- CoQ-10: 60 mg IM



# IV Micronutrients

- Myer's cocktail, Chelation, Vitamin C
- Glutathione
- Magnesium
- Trace Minerals
- Amino Acids
- Curcumin
- ALA
- Milk Thistle

# Anti-Inflammatory Protocols

- **10 Day Detox Diet (Vegan, fruits/vegetables only)**
- **Vegan/Allergy free diet (GF/CF)**
- **Liposomal Curcumin: 400 mg qd**
- **Multiple Anti-oxidant: qd**
- **D3: 5-10,000 qd**
- **EPA/DHA: 2-6 g qd**
- **Probiotics: 10-50 cfu qd**
- **IV Myer's Cocktail: qd or prn**
- **IV Glutathione: qd or prn**
- **MAH ( major auto-hemotherapy): qd or prn**

# Workshop Protocols

- IV-Ozone therapy: Lyme, FM/CFS, Chronic Pain, Arthritis
- IV-High Dose C: Infections, Cancer, FM/CFS, Allergies
- IV-Glutathione: Allergies, Memory loss, Detox
- IV-Magnesium: Pain, Spasms, CFS, IBD, Cardiac
- IV-Silver: Infections, Lyme, Pain
- IV-Myers: Fatigue, Adrenal exhaustion, Pain
- IV-Chelation: Heavy metals, CAD, Pain
- IV-Curcumin: Arthritis, depression, IBS, IBD
- IM-Magnesium, CO-Q-10, B12, Vitamin D3
- Treatment protocols for specific diseases

# CONTACT INFORMATION

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- **John S., Luben R., Shrestha S.S., et al.: Dietary n-3 polyunsaturated fatty acids and the aetiology of ulcerative colitis: a UK prospective cohort study. *Eur J Gastroenterol Hepatol.* 22:602-606 2010**
- ***"Curcumin ameliorates reserpine-induced pain-depression dyad: Behavioural, biochemical, neurochemical and molecular evidences," Arora V, Kuhad A, et al, Psychoneuroendocrinology, 2011 May 23***

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- ***Sanfilippo J., Erb T.: Evaluation and management of dysmenorrhea in adolescents. Clin Obstet Gynecol. 51:257-267 2008***
- ***"Symptomatic Dietary Vitamin B12 Deficiency in a Nonvegetarian Population," Masalha R, Rudoy I, Volkov I, et al, Am J Med, April 1, 2002;112:413-416.***