



Predictive Biomarkers: Implementing the New Standard in Evidence-based Personalized Medicine

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Health Studies Collegium

DEDICATED TO CLINICAL RESEARCH & HEALTH POLICY

Predictive Biomarker Workshop

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Disclosure: Russell M Jaffe, MD, PhD, CCN is Founder and Chairman, **PERQUE™ Integrative Health**, **ELISA/ACT™ Biotechnologies**, and RMJH Rx. This presentation has been peer reviewed for fair balance and evidence based medicine.

Russ Jaffe background

Initial training in Internal Medicine and Biochemistry at Boston University Medical Center was followed by Board Certification in Clinical Pathology and sub-specialty Board Certification in Chemical Pathology earned at the NIH Clinical Center. While coming as a skeptic, multiple cross training followed in TCM/acupuncture, mindfulness practices, functional nutrition and native healing traditions.



My research is conducted within the Health Studies Collegium Foundation and it is my privilege to serve as core faculty of the George Washington University Medical School Integrative Sciences / MMI CME program.

Allopathic Medicine, Biochemistry, Molecular Pathology and cross-training have led to re-discovery of health physiology as serial entrepreneur and reluctant policy wonk. It is my privilege and pleasure to bring together this information with an emphasis on insights, inspiration and information that can advance your practice starting *now*.

***“To live content with small means;
to seek elegance rather than luxury,
and refinement rather than fashion;
to be worthy, not respectable, and wealthy, not, rich;
to listen to stars and birds,
babes and sages, with open heart;
to study hard;
to think quietly, act frankly, talk gently, await
occasions, hurry never;
in a word, to let the spiritual, unbidden and
unconscious, grow up through the common--
this is my symphony.”***

WILLIAM HENRY CHANNING,
Unitarian Minister, 1780-1842

The next five pages provide a high level view of these issues. **Functional Immunology** in practice bridges the re-thinking that makes these breakthroughs possible. Looking from a health rather than sickness perspective, eight Predictive Biomarker tests are able to encompass the 92% of lifetime health that is epigenetic habit/choice. High tech science meets high touch lifestyle making personalized, predictive healthcare available today to those proactive about themselves and those for whom they care.

ReThink Health™: Need and Opportunity

Create *your* personalized health enhancement plan. This is an invitation to reweave the fabric of everyday life in light of personal and documented needs and preferences, evidence and experience in health promotion for life. *Joy in Living: The Alkaline Way* (http://perque.com/rethink_health/) is designed as a personalize-able start, roadmap and practical guide for those seeking lifetime health.

This 'ReThink Health' approach is presented from three perspectives: personal, population and payor policy. Part of the need for this presentation are the growing challenges of quality and cost that continue to roil the healthcare system. Volume of services provided and number of procedures done continue to be the measures and metrics of success that most healthcare businesses use. Value of services provided and lifetime health enhanced or risks reduced make more sense as criteria for payment within the Accountable Care Organization (ACO) framework now becoming central to healthcare operations. Incentives and guidance are provided to attain and sustain full health regardless of age or history. While average function declines after mid-life, those who devote about five percent of their time and attention to the healthier habits detailed here maintain a youthful vitality throughout their full lifespan.

ReThink Health Perspective: Personal Experience

Most people interact with the medical system seeking health promotion or risk reduction, yet too often only symptom-based sickness care is available. In the United States and much of the industrialized world today healthcare is increasingly fragmented, mechanistic and depersonalized. Healthcare is organized into a series of silos organized around different kinds of pathology with a 'pill for every ill.'

Physicians focus on symptom removal, triaging more than treating, as if that is the best medicine can deliver. Their training is mechanistic and language descriptive, focusing on what is wrong and how to stop 'it' rather than understanding what is needed so the body can recover more fully its health, resilience and vitality.

How the patient feels, believes and understands their situation greatly influences results. Even more rare today is meaningful communication between patient and professional. Rarely is there communication between professionals about the client. A collateral effect is excessive prescription medication use and adverse events due to overuse of such medications with a focus on symptom suppression rather than the more fundamental cause(s).

Older adults commonly have more than a dozen daily medications prescribed.

Half of these medicines are often for side effects of other medicines whose benefit may be marginal or for which other remedies are available at lower risk and cost.

For the last century, most academic physicians have been trained as ontologists, those who believe disease is externally caused and treatable through symptom-based care.

Disease conceived as externally caused needs to be fought and defeated.

All medicines that are 'anti-' something are based on fighting with some dis-ease.

In contrast, this approach suggests that evidence supports physiologic personalized therapies as superior to sick care in risks, outcomes and costs.

Approaches that boost the body's innate ability to prevent illness, then repair and restore health, are at the heart of this personal approach to rethinking healthcare.

When it comes to wellness and health promotion, an innate inner healer can often be evoked when enough of all essentials are present and the environment is as supportive and toxin free as possible. Cumulative wisdom, if cultivated and wisely interpreted, can guide individuals toward greater insight and often restore healthful vitality. Incentives can facilitate health enhancing lifestyle choices—particularly in regard to what we eat, drink, think and do linked with how we feel and function.

This includes 21st century supplementation sufficient to manage total current stress and toxin exposure. Predictive biomarker tests, interpreted to their least risk or best outcome 'goal value,' provide evidence-based hope for better results within smarter systems' approaches advocated here, as detailed below.

This functional immunology and predictive biomarker workshop covers:

Overview

Strong evidence is emerging that using the following **Predictive Biomarkers** to assess risk and guide therapies using **goal values** better removes obstacles to recovery and evokes healing responses than any other approach to health restoration and to health maintenance.

Predictive Biomarkers with higher laboratory precision (lower variance on results from >20% today to <5% after today) provide individual rather than statistical guidance. Use of **goal values** (the value that achieves best long and short term outcome) to replace lab statistical lab ranges allows personalized predictive medicine to be put into practice and into lives.

Through application of these predictive biomarkers and goal values, **epigenetic markers improve promptly, usually within a few weeks to months**. This adds life to years and years to life.

Short *and* long-term **quality of life is determined by what people eat, drink, think and do**. The elegant interdependence of all life is revealed through an understanding of a few key regulatory processes that can be clinically assessed. Using physiology to understand problems of living can create opportunities for deep and profound healing.

This means a shift in thinking and practice priorities, placing personal welfare ahead of getting along by going along. Rediscover homeostasis, physiology and functional approaches. Let go of allostasis, pathology and mechanical interventions. Seeing the body as a machine that breaks down and needs external fixing came to dominate academic medical education for the past century following the 1910 Flexner Report. While outmoded, the memes, the patterns of thought and thinking, remain engrained in most curricula, practice patterns and payment systems.

Join me in **rethinking health** from the ground up, from the top down and to save lives.

Allostatic and homeostatic loads, evidence based predictive tests, and the celebration of small steps to greater health today that translate into better health for a lifetime for the individual and their community. In general you can add decades of low cost quality life to most people within just a few months of this approach to competent caring.

Applied nationally, **over 1,000,000 lives a year can be saved** by applying what we know. Of these, 500,000 are due to the avoidable ravages of diabetes and all its cardiovascular and neurologic consequences. Of the remaining 500,000 about half die from correctable but too often undetected nutritional needs known as biochemical individualities. About an equal number of people succumb each year to the psychological and emotional burdens of a healthcare system where care is a privilege rather than a right, and those most disadvantaged are often most adversely afflicted by such disconnected and dysfunctional healthcare systems. If citizenship includes the right to pursue happiness, then surely healthcare is a right and not a privilege. My experience is that when we feel well we can pursue meaningful work and persevere. When unwell, it is usually not possible to 'pursue happiness.'

Each life saved adds, on average, \$8,000,000 to the nation's balance sheet. This means America could be eight trillion dollars richer each year. This also means that much suffering, anguish and grief can be avoided. This means a huge opportunity is being ignored largely because the sensible and wiser choices conflict with current systems reluctant to be bypassed or leap frogged, even with such substantial opportunities to save both lives and treasure. Interestingly, when people recover from serious illness, their quality of remaining life goes up and the sick care costs of their remaining life go down.

While this is a world filled with challenge and suffering, we can figure out the causes and, through engaged nonattachment, be released from the distress of afflictive feelings. Nothing changes outside; internal neuro-hormonal, immune defense and repair, digestive, metabolic set points and responses greatly change. Patience and perseverance further success.

This integrative approach contributes substantially to the **triple aim of better health, better care and lower costs**. This approach makes biochemical individuality come alive for each client. Evidence based **predictive biomarker** tests, with care guided by meeting needs to bring tests results to best outcome **goal values** are discussed below. This approach improves outcomes and patient satisfaction while reducing net costs of care. This approach addresses causes in ways both personal and yet rigorous. Our group has re-validated them over decades, as applied in model and research practices, in outcome studies and policy briefings. All that is synthesized in this workshop.

We stand on the shoulders of those who led the way:

- The Aphorisms of Hippocrates
- *De Curare Ratione* by Galen of Pergamon
- *Guide for the Perplexed* by Maimonides (RamBam)
- *Prognostications* by Paracelsus
- *Introduction to the Study of Experimental Medicine* by Claude Bernard
- *The Autocrat and the Professor at the Breakfast-Table* by Oliver Wendell Holmes, Sr.
- *Immunity in Infective Disease* by Élie Metchnikov
- *Aequanimitas* by Sir William Osler
- *The Wisdom of the Body* by Walter B Canon
- *Mirage of Health* by René Dubos
- *Mind as Healer, Mind as Slayer* by Ken Pelletier

Integrative Medicine Triple Aim Caregivers' Checklist: Better Care, Better Health, Lower Costs

1. Welfare of those cared for before our own.
2. Nature, nurture and wholeness do no harm.
3. Caring is more important than precise diagnosis.
4. Caring, competence and composure build trust.
5. People often die of correctable essential deficits.
6. Fear of diagnosis kills more than does disease.
7. Provide value more than volume.
8. Provide guidance more than results or findings.
9. Earn their confidence and trust
10. Predictive biomarkers cover epigenetics, life-style and all causes of mortality.
11. Functional tests with high reproducibility are more predictive, personal, efficient, and effective.
12. Teach people to be mindful of their issues.
13. Risks reduced save lives + build civil society.
14. Remove obstacles to recovery.
15. Evoke healing responses.
16. Relaxation responses can be practiced.
17. Breath is a refuge for those who practice.
18. What people eat, drink, think and do determine their vitality and health status.
19. Primary prevention affirms strengths and mitigates risks one individual at a time.
20. We stand on the shoulders of revered physician scientists such as Hippocrates, Huang Ti, Galen, Maimonides, AVECINA, Paracelsus, Claude Bernard, Oliver Wendell Holmes, Walter B Canon, René Dubos, Bernie Lown and Linus Pauling.

Session I

Predictive Biomarkers: Keys to Scientific Integrative Medicine

What defines a biomarker compared to a *predictive* biomarker?

Why **predictive biomarkers** are both agnostic and (therefore) so useful

agnostic: Apply to all ethnic, socioeconomic and geopolitical groups;
predict ten-year survival; responsive to short term changes.

useful: Any therapies epigenetic outcome effects can be assessed by before & after values for the relevant predictive biomarker (see below).

Introduction to the **8 predictive biomarkers** that qualify & together cover **all of epigenetic risk (92%** of lifetime health with both immediate *and* 10 year outcome / survival linked to test result)

Why *these* 8 and how/when/if to use the 80,000 other tests?

Predictive **goal value** vs usual statistical “normal” ranges:

Goal values as a ‘Next Big Thing’ in medicine,
reimbursement, policy & practice; beyond *Beyond Normality*
by Galen and Gambino, 1976

Bob Galen, MD, MPH

*Transformative concepts in 1970s including Sensitivity,
Specificity and Predictive Significance of lab tests.*



Next big thing: Biomarker, **Predictive Biomarker** and high sensitivity Predictive Biomarker (hsPB™)... Lab QC / precision matters... require functional tests & <5% variance in results

How to **apply functional tests and predictive biomarkers in practice:**

Case Successes & outcome studies over three decades

(75,000 cases; >20,000,000 cell cultures; <3% variance on blind split samples)

Consumer Driven Health / Internet Driven Information: Half billion dollar niche

Why **functional tests** are rapidly replacing familiar physical chemistry and why clinicians are often among the last to know.

Typical physiologic responses to low risk, high gain first line comprehensive care interventions are discussed when less than preferred goal values for each biomarker are observed.

Physical chemistry tests have been leap-frogged by functional tests such as the following...

1. Usual tests of metabolism such as electrolytes have been superseded by three measures: **Urine pH** after rest, **hydration** status and **magnesium**, the forgotten electrolyte.
2. Kidney function such as BUN, creatinine and calculated GFR replaced by kidney **concentrating capacity**.
3. Serology / antibody tests: Thousands of non-functional and thus confusing conventional ELISA tests are in widespread use. Tests that tell you an antibody is present, but nothing about its function, are an example. Is the antibody helpful and neutralizing or harmful and complement fixing; is the problem past and resolved or current and raging? Only a functional test can tell. Most antibodies are helpful; only a few cause trouble. Advanced cell culture tests such as **lymphocyte response assays (LRAs)** are able to distinguish helpful from harmful antibodies while also detecting non-antibody mediated T lymphocyte responses.

Repair based personalized programs using this functional, integrative approach restore tissue structural integrity including of the blood thyroid barrier. Such functional restoration is associated with predictable changes in the biomarkers discussed below.

Repair deficits in physiology are opportunities to remove obstacles to recovery and evoke healing responses; a friend to be embraced. Inflammation is the same process observed by pathologists who look at the consequences. From that conventional perspective, the same situation looks like a fire to be fought; an enemy to be silenced.

Join the exciting opportunity to do good and do well, to address causes and to evoke healing responses.

Biomarker



A portmanteau of “biological marker,” refers to a broad subcategory of medical signs – i.e., *objective indications of medical state observed from outside the patient – which can be measured accurately and reproducibly.*

Kyle Strimbu & Jorge A. Tavel, M.D. What are Biomarkers? *Curr Opin HIV AIDS*. 2010; 5(6): 463–466.



Predictive Biomarker



A “**predictive** biological marker” is a specific subcategory of analytic observations, i.e., *objective indications of medical state observed from outside the patient that can be measured accurately and reproducibly while predicting 10 year survival & QoLY*

Modified by Jaffe from Kyle Strimbu & Jorge A. Tavel, M.D. What are Biomarkers? *Curr Opin HIV AIDS*. 2010; 5(6): 463–466.




THE NEXT BIG THING

Predictive Biomarkers

Criteria...

- Ethnic*
- Geographic*
- Socioeconomic*
- Predictive Significance*




High sensitivity / hs

PREDICTIVE BIOMARKERS TESTS

- Epigenetics,*
- Metabolomics &*
- Microbiomics*

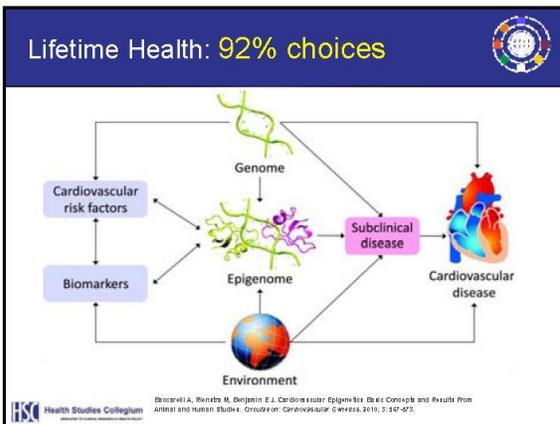
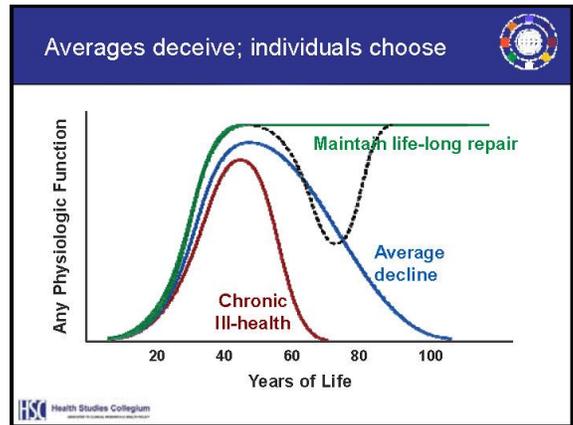


hsPB

PREDICTIVE BIOMARKERS TESTS

All cause morbidity & mortality
Compare therapy outcomes
Therapeutic Biomarkers





High Sensitivity Predictive Biomarkers (hsPB)
Personalized, Evidence-Based, Comparative




John R. Pothoff, Biomarkers, Proven Evidence for Comprehensive Evidence-Based Research, RESEARCH, 12/11/2014, on Predictive Medicine & Health Protection. Copyrighted by Dr. Pothoff, RESEARCH, 12/11/2014. Copyrights of Biomarkers Predictive of Lifetime Health. PhD, 2014. 10/23/14 10:14:10.

Essential Predictive Bio-Marker Tests to Determine Your Functional Age

Test Name	Test Descriptions	Predictive Goal Values
hsHgb A1c (hsHemoglobin A1c)	Sugar / insulin / energy... AGE	<5%
hsCRP (hsC-Reactive Protein)	Repair, inflammation immune status	<0.5 mg/L
hsHCY (hsHomocysteine)	Detox, epigenetic, methylation... Sulfur	< 6 μmol/L
hsLRA (hsLymphocyte Response Assay)	Immune memory / repair tolerance	No delayed reactions




Elective Predictive Bio-Marker Tests to Determine Your Functional Age

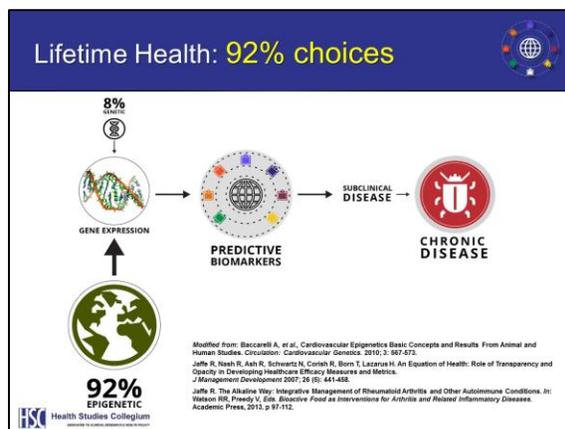
Test Name	Test Descriptions	Predictive Goal Values
1st AM Urine pH (acid/alkaline status)	Mineral need & cell acidosis risk	6.5 – 7.5
Vitamin D (25-Hydroxy-cholecalciferol)	Vitamin D level (cell communication status)	50 – 80 ng/mL
Omega-3 Index (Omega 3:6 EFA ratio)	Omega 3:6 ratio; EFAs	>8%
8-OHdG (8-Oxo-Guanine)	Oxidative stress and antioxidant status	<5 ng/mg creatinine



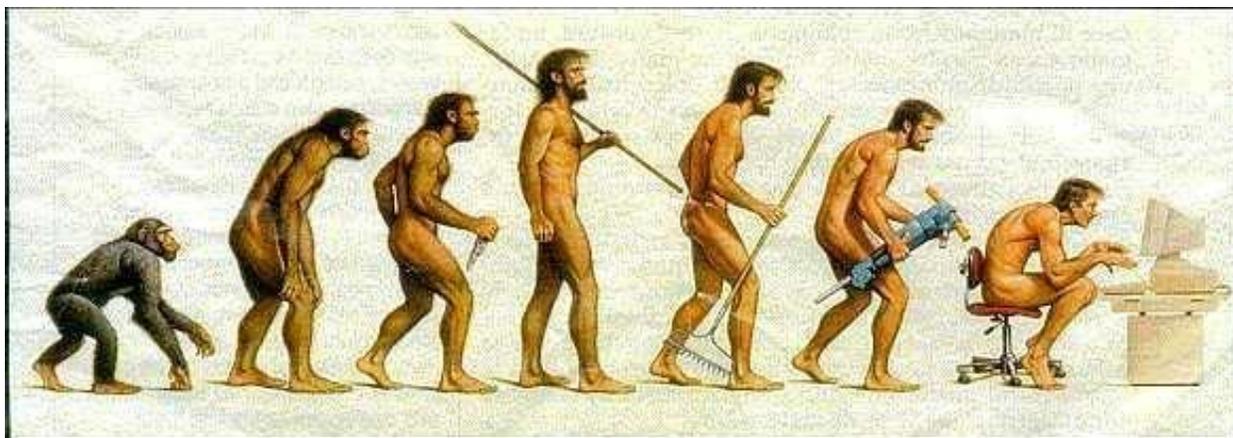

'Normal' vs Predictive goal values

	'Normal' Values	Predictive Goal Values
Hbg A1c	4-6% Therapy Goal: <7%	<5%
hsCRP	1-3 mg/L	<0.5 mg/L
Homocysteine	4-17 µmoles/L	<6 µmoles/L
LRA	NA	Immune Tolerance
1 st AM urine pH	4.6-8	6.5-7.5
Vitamin D	20-40 ng/mL	50-80 ng/mL
Omega 3 index	ND	>8%
8 OH dGuanisine	4.6-19.2 ng/mg (11.9+/-7.3 ng/mg)	<5ng/mg creatinine

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Note: Sitting is the new smoking



Somewhere, something went terribly wrong

and we have answers to share that are uniquely personal and effective.

Session II

Predictive Biomarkers: Introduction and Initial Four

Terminology:

- Immune defense and repair system
- Inflammation
- Metabolome (metabolism)
- Microbiome (digestion)
- Cell elective protective verses survival mode based on pH
- RedOx
- Sufficient essential and conditionally essential nutrients
- Evidence based biochemical individuality
- Sick care / health care
- Allostatic and homeostatic load
- Reducing oxidative stress while enhancing oxidative phosphorylation

Predictive Biomarker Tests:

How to select & use them; how to reach predictive biomarker goal value quickly

1. LRA: Lymphocyte Response Assay whole blood tests and life-style program

“Tolerance in immune defense and repair systems mean resilient good health, restorative sleep and more opportunities to learn optimism. Broken tolerance means allergy and/or hypersensitivity. Restoring tolerance is one of the great opportunities of our time.”

~Russ Jaffe, Center for Human Functioning, 1983

Brief history of... allergy, immunology, serology (antibodies like IgG and sIgA / ELISA™), cell culture (ex vivo LRA by ELISA/ACT™) and other LRA tests, immune tolerance, immune compared to digestive intolerance, sensitivity, hypersensitivity, delayed allergy.

Immune defense and repair systems: Innate and Acquired responses and what to do to reset to tolerance rather than chase symptoms.

Toxicity compared with hypersensitivity to haptens including toxic metals, hormone disrupters and solvents.

International Academy of
IAOMT
Oral Medicine & Toxicology

2014 Spring Conference
Vancouver, BC

hsCRP < 0.5 Goal Value

Ascorbates: Individual need based on personalized
Ascorbate Calibration: COLEN-4HSC.ORG

In vivo always protective antioxidant;
100% l-ascorbate, fully reduced & buffered

Recycles tocopherols, lipase, GSH, taurine,
ALA, NAD, FAD, DNA, cytochromes,
PUFA [Omega 3 & Omega 6]

Sets cell RedOx level: Fe++/+++ , Cr

Quench oxidative damage; trap free radicals

Donates Electrons: ↑ Ascorbate salvages
Cyt C mitochondria battery

Russell Jaffe
MD, Ph.D., CCN, FASCP, FACN, FACA, FOCIS, FAMLI, FRSM
Rethink Health: Predictive Biomarkers

Russ Jaffe, 1964 to 1984 to today

Goal Value: Tolerance; no reactions

If loss of tolerance is confirmed by an *ex vivo* Lymphocyte Response Assay (LRA) cell culture, follow tolerance and immune resetting program. This includes information provided by the client in a Health Appraisal Questionnaire (HAQ).

A six month program of what people should eat, ought to avoid (because of B and/or T cell reactions), what supplements to take, what activities and mindfulness practices are most likely to help in this condition.

These tests replace all serology, IgG, ELISA IgG, and all antibody tests where the results do not and cannot distinguish helpful from harmful and miss important (T Cell) information that only an *ex vivo* LRA test can provide.

√ **LRA by ELISA/ACT *ex vivo* immune defense and repair system cell culture tests qualifies as an all cause morbidity / mortality test.**

www.PERQUE.com, www.ELISA ACT.com, www.HealthStudiesCollegium.org,
www.DrRussellJaffe.com

Predictive Biomarker

Immune Tolerance

Lymphocyte Response Assays

hsLRA

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Immune System Tolerance, DTH

Defend, Delete, then Repair

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The Immune System... Two Parts

INNATE: Born With
Repair & Defense

Innate Immunity

ADAPTIVE: If Needed
Amplified Defense

Adaptive Immunity

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Th1 / Th2 balance; B cell plasma cell balance

Adaptive Immunity

Adaptive Immune Response

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Adaptive Immune System

HSC Health

Natural Killer Cell & Virus-cell

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Delayed Hypersensitivity

In Vitro

- Antibody (IgG, Serology) tests:
 - √ Static, misleading
- Particle size tests:
 - √ Random, misleading
- Cytokine release:
 - √ Interesting technology

Ex Vivo

- **Lymphocyte response tests:**
 - √ **hsLRA <3% !**

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Lymphocyte Response Assays (hsLRA <3% variance on results)

hsLRA (ELISA/ACT™ method)

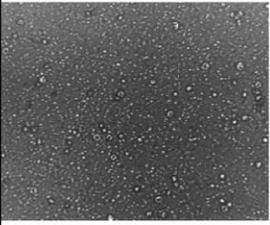
- Directly observe lymphocytes under conditions similar to body (**ex-vivo**)
- ALL 3 delayed allergy paths
- Advanced method few false positives (<1%)
- Intolerances (*if any*) can *then* be detected & digestion strengthened



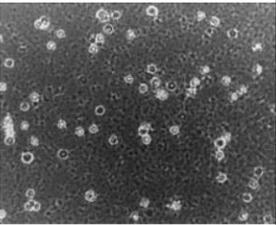
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hsLRA Cell Culture Tests

Non-reactive lymphocytes



Reactive lymphocytes

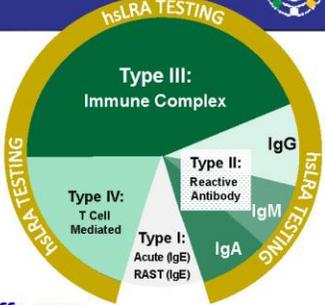


Olympus SC35 Magnification 600x

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hsLRA

Comprehensive Functional Ex-Vivo

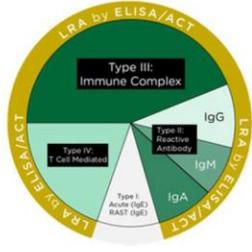


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Hypersensitivity/Allergy Types



Immediate Allergies
Type I – Acute, RAST (IgE) Histaminic

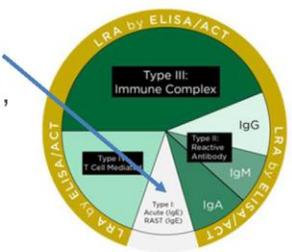
Delayed Allergies
Type II – Reactive Antibody; B-Cell
Type III – Immune Complex; vasculitis
Type IV – T-Cell Mediated

Delayed/hidden allergies
HARD to identify by history / serology

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Acute Allergy: Type 1, IgE Hypersensitivity

Runny eyes,
Sudden itching,
Hives,
Sudden swelling,
Anaphylaxis



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Lymphocyte Response Assay
(Amplified Advanced Cell Culture Test)



Ex vivo sample for >500 cell cultures:

- Foods, additives / preservatives
- Environmental chemicals
- **Toxic minerals/heavy metals:**
- Medications
- Molds
- Danders, hairs, and feathers
- Herbs

hsLRA Immune Enhancement Program



- Substitute for reactive substances:
 - 6+ months for strong reactions,
 - 3+ months for moderate reactions
- Correct nutritional deficiencies that reduce defense and repair abilities
- Initiate detox mechanisms
- Alkalinize:
Enhance human healing response

Health Assessment Questionnaire (HAQ)



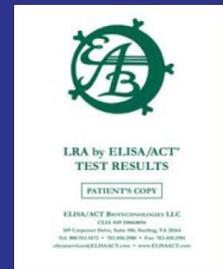
- Personalized recommendations based on **Health Assessment Questionnaire:**
 - Supplements
 - Activity & environment recommendations
 - Rotation diet option
- Joy in Living:
The **Alkaline Way**



hsLRA results: Restore Tolerance & QoL



Personalized Report



hsLRA

Goal Value: Tolerance; no reactions



LRA by ELISA/ACT replaces all serology, IgG, ELISA IgG, and all antibody tests where the results do not and can not distinguish helpful from harmful while missing important (T Cell) information that only an *ex vivo* LRA test can provide.

√ LRA by ELISA/ACT *ex vivo* immune defense and repair system cell culture tests - an all cause morbidity / mortality test.

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www.DrRussellJaffe.com, www.BetterAbTestsNow.com

HSC Community Based Outcome Studies

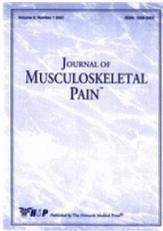


- **Substitute** LRA reactive substances
- **Correct** nutritional deficiencies that reduce defense and repair abilities
- **Initiate** detox mechanisms that remove xenotoxins for individual
- **Concentrate** on evoking human healing responses

Multiple Successful Outcome Studies

“A Novel Treatment for Fibromyalgia Improves Clinical Outcomes in a Community-Based Study”

- 50% less pain
- 70% less depression
- 50% more energy
- 30% less stiffness



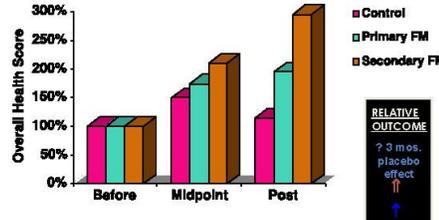
JOURNAL OF MUSCULOSKELETAL PAIN

Jaffe RM, Deuster PA. A Novel Treatment of Fibromyalgia Improves Clinical Outcomes in a Community-Based Study. *Journal of Musculoskeletal Pain*, Vol. 6, No. 2.

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Case-Controlled Outcome Study:

Overall Health Scores Change in Study Subjects



Overall Health Score

300%
250%
200%
150%
100%
50%
0%

Before Midpoint Post

■ Control
■ Primary FM
■ Secondary FM

RELATIVE OUTCOME
≥ 3 mos. placebo effect

Jaffe RM, Deuster PA. A Novel Treatment of Fibromyalgia Improves Clinical Outcomes in a Community-Based Study. *Journal of Musculoskeletal Pain*, Vol. 6, No. 2.

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hsLRA: Successful Diabetes Studies

“Tolerance loss in diabetics: Link with foreign antigen exposure”

- >1 % ↓ in HbA1C levels in both Type 2 & Type 1 diabetes
- 18% reduction of insulin levels in Type 2 diabetes

70,000+ Cases 30+ years
Patient & Practitioner Case Successes

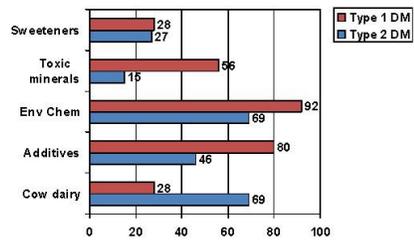


DIABETIC Medicine

Jaffe R, Mani J, DeVane J, Mani H. Tolerance loss in diabetics: Association with foreign antigen exposure. *Diabetic Medicine: A Journal of the British Diabetic Association* 2006 Aug; 23(8): 924-925.

HSC Health Studies Collegium

Comparison of immuno-reactants in Type 1 and Type 2 diabetes



Immuno-reactants

28 27
56 15
92 69
80 46
28 69

0 20 40 60 80 100

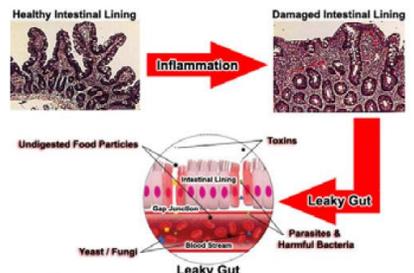
■ Type 1 DM
■ Type 2 DM

Jaffe R, Mani J, DeVane J, Mani H. Tolerance loss in diabetics: Association with foreign antigen exposure. *Diabetic Medicine: A Journal of the British Diabetic Association* 2006 Aug; 23(8): 924-5.

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Leaky Gut

75% immune system within gut: Peyer's patches



Healthy Intestinal Lining → Inflammation → Damaged Intestinal Lining

Undigested Food Particles, Toxins, Parasites & Harmful Bacteria, Yeast / Fungi → Blood Stream → Leaky Gut

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Microbiome Essentials

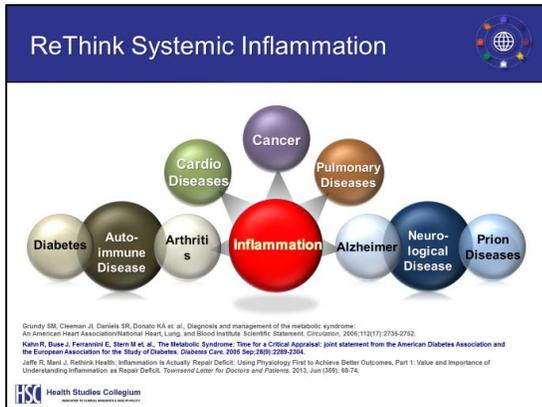
- **Prebiotic fibers:** 40-100 g/day; 80:20::soluble:insoluble
- **Probiotic bugs:** 40-100 billion CFU/day; live, dairy free medium
- **Symbiotics:** Recycled Glutamine 1.5-6 g/day taken on rising, before bed &/or exercise

Gibson GR, Roberford MB. Dietary modulation of the human colonic microbiota: introducing the concept of prebiotics. *J Nutr* 1995; 125:1401-1412.

Xue H, Sui AJ, Wischmeyer PE. Glutamine therapy improves outcome of in vitro and in vivo experimental colitis models. *JFEN J Parenter Enteral Nutr*. 2011 Mar; 26(2): 188-197.

Gibson GR, Collins DM. Concept of Balanced Colonic Microbiota, Prebiotics, and Symbiotics. In "Probiotics, other nutritional factors, and intestinal microflora", Nestle Nutrition Workshop Series, Vol. 42, Uppincott-Raven, Philadelphia, 1999.

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2. hsCRP (finger stick or serum)



Paul Ridker
2000 to today

“While many proteins are induced (called), few are predictive clinically. High sensitivity C-Reactive Protein (hsCRP) is an all cause morbidity and mortality predictive biomarker, particularly sensitive to degrees of current inflammation” (repair deficit).

~Paul Ridker, Gordon Conference, 2000

Inflammation in pathology is (really) repair deficit in life (physiology)

This **rethinking** transforms what had long been misunderstood as a fire to be fought into an opportunity to heal.

d/c NSAIDS, ASA & acetaminophen:

Replace with particular polyphenolic bioflavonoids Quercetin dihydrate and soluble LMW OPC along with fully buffered, reduced 100% l-ascorbate (nature’s vitamin C); enhanced magnesium uptake with choline citrate; dissolve under the tongue before swallowing to go to brain before body and to enhance uptake when enteropathy reduces intestinal uptake and healing responses need be evoked.

High sensitivity C-Reactive Protein (hsCRP, hs-CRP, cardioCRP)

Goal value: < 0.5 mg/dl

If hsCRP is > 0.5 mg/dl, use C Cleanse (<http://www.perque.com/lifestyle/self-tests/ascorbate-cleanse/>) to determine ascorbate need. Include synergistic quercetin dihydrate flavonoid and soluble OPC flavanol (2-6 taken BID-QID as needed to enhance repair and improve comfort). <http://www.perque.com/products-page/energy/perque-repair-guard-2/>

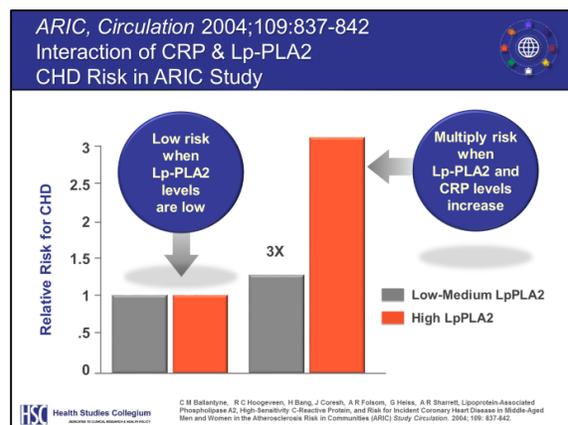
About one in five cases also needs a liquid nutrient day each week to improve microbiome metabolome communication as described in *Joy in Living: The Alkaline Way* (<http://perque.com/alkway/>).

The hsCRP test is more sensitive / specific for degree of repair deficit inflammation than any other 'inducible' protein including Ferritin, IL-6, Fibrinogen, beta 2 microglobulin, alpha 1 macroglobulin, transferrin, et al.

√ **hsCRP qualifies as an all cause morbidity and mortality test.**

Predictive Biomarker
High Sensitivity
C Reactive Protein
= hsCRP

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hsCRP is Body's Cry For Repair

CRP-Mediated Uptake of LDL by Macrophages

Macrophages incubated with CRP / LDL

Macrophages incubated with LDL alone

0 min

0 min

30 min

30 min

60 min

60 min

LDL Containing Vesicles

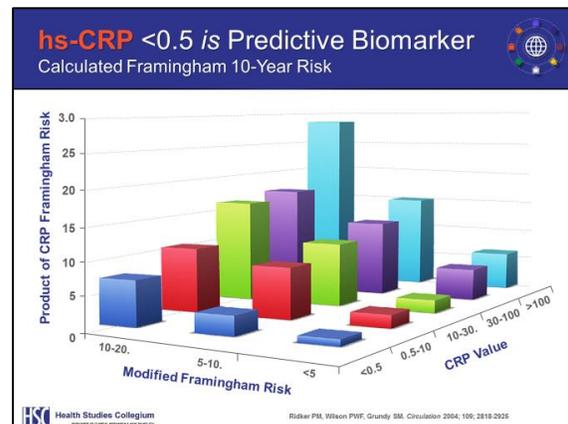
LDL vesicles deeper and disseminated within the cytoplasm

Slight dissemination of LDL

No LDL Containing Vesicles

Adapted from Zwaka TP, et al. *Circulation* 2001; 103: 1194-1197.
 Silva D, Paine de Lacerda A. High-sensitivity C-reactive Protein as a Biomarker of Risk in Coronary Artery Disease. *Risk Prev Cardiol*. 2012; 31: 753-756.

Health Studies Collegium

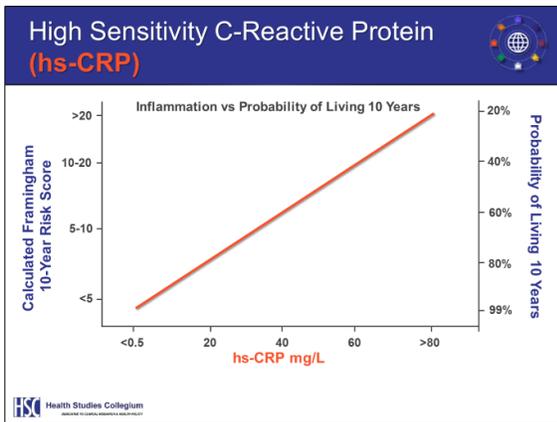
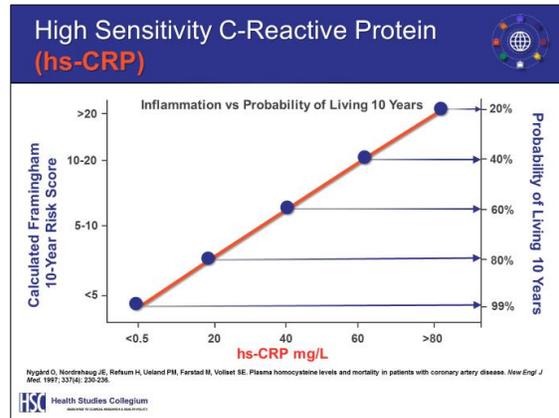


hsCRP Measures Repair Need

Inflammation in pathology =
Repair deficit in physiology
Healthy body repairs w/o **hsCRP** ... 'cry for help'

Vourvaranakis M, Karfori MG, Katsouras KI, Vlachatis DA, Moldovan C, Touzoulis D, Stefanadis C. Biomarkers as a Guide of Medical Treatment in Cardiovascular Diseases. *Curr Med Chem*. 2012; 19(19): 2485-2494.
Silva O, Pais de Lacerda A. High-sensitivity C-reactive Protein as a Biomarker of Risk in Coronary Artery Disease. *Rev Port Cardiol*. 2012; 31: 733-742.
Jaffe R, Mani J. Rethink Health: Inflammation is Actually Repair Deficit: Using Physiology First to Achieve Better Outcomes. Part 1: Value and Importance of Understanding Inflammation as Repair Deficit. *Townsend Letter for Doctors and Patients*. 2013, Jun (349): 98-114.

Health Studies Collegium



Oxidation Markers as Predictive Biomarkers

Flavonoids & Flavonols

Oc1cc(O)c2c(c1)c(O)c(O)c2O

Polyphenolic Ascorbate Synergists

- Clinical Pearl:** Protect & Activate structure repair; Recycles cell ascorbate
- Safer, synergistic... anti-histaminic, steroid sparing
- Activate elective protectives, detox, recycling

Moldovan E, et al. The Effects of Plant Flavonoids on Mammalian Cells: Implications for Inflammation, Heart Disease and Cancer. *Pharmacol Rev*. 2009; 62: 873-911.
Kim Y, Park H, J, Yoon S, H, Kim M, J, Lee K, H, Chung J, H, Kim H, K. Anticancer Effects of Oligomeric Proanthocyanidins on Human Colorectal Cancer Cell Line. *J VU-CR World J Gastroenterol*. 2006; 11(30): 4874-4878.
Jaffe R, Mani J. Clinical Evidence in Favor of Specific Polyphenolics. In: Watson RR, Preedy VR, Zandi S, Eds. *Polyphenols in Human Health and Disease*. Academic Press, 2013: 695-705.

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hsCRP Pro Repair Antioxidant Nutrients

- Personal C Cleanse**
Only 100% l-ascorbate, fully reduced & buffered
- Dark fruits; super foods**
Polyphenolics
- B methyl cofactors**
Balanced Natural Forms
- BioDetox**
Ascorbates & Live Greens
- High sulfur foods**
GGOBE
- Butyrates & EPA/DHA**
Purer, uncontaminated, micellized = better uptake

Jaffe R, Mani J. Clinical Evidence in Favor of Specific Polyphenolics. In: Watson RR, Preedy VR, Zandi S, Eds. *Polyphenols in Human Health and Disease*. Academic Press, 2013: 695-705.
Jaffe R. Cardioprotective Nutrients. In: Watson RR, Preedy VR, Eds. *Bioactive Food as Dietary Interventions in Cardiovascular Disease*. Academic Press, 2013: p 102-119.

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hsCRP < 0.5 Goal Value

- Ascorbates: Personalized need
Ascorbate Calibration: CCLN.4HSC.ORG
- In vivo** always protective antioxidant; **100% l-ascorbate, fully reduced & buffered**
- Recycles tocopherols, lipoate, GSH, taurine, ALA, NAD, FAD, DNA, cytochromes, PUFA [Omega 3 & Omega 6],
- Sets **cell ReDox** level: Fe^{++/+++}, Cr^{+/++/+++},
- Quench** oxidative damage; trap free radicals
- Donates Electrons: ↑ Ascorbate salvages **Cyt C mitochondria battery**

Engel S, Saffer S. The Biochemical Functions of Ascorbic Acid. *Annu Rev Nutr*. 1996; 6: 365-406

Health Studies Collegium

hsCRP



"While many proteins are induced (called), few are predictive clinically. High sensitivity C-Reactive Protein (hsCRP) is an all cause morbidity and mortality predictive biomarkers, particularly sensitive to degrees of current inflammation" (repair deficit).
Paul Ridker, MD
Gordon Conference, 2000

HSC Health Studies Collegium

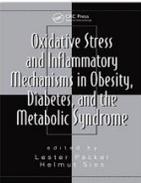
hsCRP Repair Deficit & Inflammation

Adequate ascorbates, polyphenolics & other antioxidants enhance repair and reduce 'cries' for health such as hsCRP, ferritin, COX2, IL-6, fibrinogen, TNF, alpha 2 macroglobulin...



HSC Health Studies Collegium <http://www.perque.com/products-page/energy/perque-repair-guard-2/>

Chronic Inflammation = Chronic Disease = Chronic Repair Deficit (cont'd)

By 2025 in US:
 ~ 50 MM Diabetics & 100 MM Pre-diabetics

Yet Two Americans die every minute
 500,000/year of **avoidable** CVD events

Source: CDC and AHA

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hsCRP: Inflammation = Repair Deficit

Goal Value: <0.5 mg/dl

- Liquid nutrient day/week:**
 Improve microbiome metabolome communication
- hsCRP:** More sensitive / specific test of repair deficit / inflammation than any other 'inducible' protein (Ferritin, IL-6, Fibrinogen, beta 2 microglobulin, alpha 1 macroglobulin, transferrin, et. al.)
- √ hsCRP qualifies as an **all cause morbidity and mortality test**

http://perque.com/pdfs/Joy_In_Living_TheAlkalineWay.pdf

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Individual Ascorbate Based on Oxidative Stress

Ascorbate Calibration
 ± Probiotics, recycled Glutamine, Mg, Polyphenolics

Healthy	Moderate Ills	Chronic Ills
<ul style="list-style-type: none"> 1.5 grams; ½ tsp Every 15 min 6 grams / hour 	<ul style="list-style-type: none"> 3 grams; 1 tsp Every 15 min 12 grams / hour 	<ul style="list-style-type: none"> 6 grams; 2 tsp Every 15 min 24 grams / hour

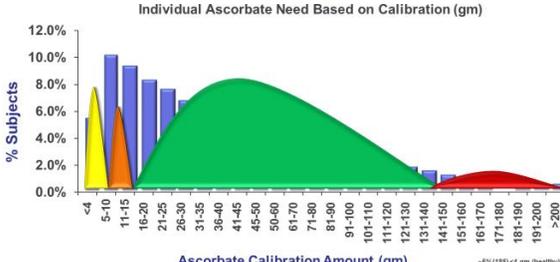


Health Studies Collegium, Joy in Living The Alkaline Way, 20th ed. 1990-2014.

HSC Health Studies Collegium

Ascorbate needs from 4-100+ g/day

Individual Ascorbate Need Based on Calibration (gm)



Jaffe R. Cardio-protective Nutrients. In: Watson RR, Preedy VR, Editors Bioactive Food as Dietary Interventions in Cardiovascular Disease. Academic Press, 2013, 103-119.

Based on Jaffe Protocol 1987-2008

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PERQUE Potent C Guard

- L-Ascorbate 100% reduced & buffered
- Repairs & renews better
- Universal maternal antioxidant



Abdollahzad H, Eghtesadi S, Hourmohammadi I, Khadem-Ansari M, Nejati-Gashti H, Esmailizadeh A. Effect of vitamin C supplementation on oxidative stress and lipid profiles in hemodialysis patients. *Int J Vitam Nutr Res*. 2009 Sep;79(5-6):281-287.
 Ryan MJ, Dudesih HJ, Docherty M, Geronilla KB, Baker BA, Hoff GG, Cutlip RG, Alway SE. Vitamin E & C supplementation reduces oxidative stress, improves antioxidant enzymes & positive muscle work in chronically loaded muscles of aged rats. *Exp Gerontol*. 2010 Nov;45(11):882-895.
 England B, Seltzer S. The biochemical functions of ascorbic acid. *Annu Rev Nutr*. 1986;6:385-406.
 Jaffe R, Brown S. Acid-Alkaline balance and its Effect on Bone Health. *Int J Integrative Med*. 2000; 2 (6): 7-18.

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3. 8-OHdG (AM urine)

“Best validated measure of DNA oxidative stress, DNA fragmentation, telomere length, and Fragile X Syndrome.”

~ Krzysztof Roszkowski, Nicolas Copernicus U, 2012

Measure of DNA / Nuclear oxidation status; assess oxidation reduction potential of the nucleus (histone repair system, transcriptases, micro RNAs, telomere length)

Goal value: < 5 µg/mg creatinine

If excess oxidation in nucleus is confirmed, use C Cleanse to determine ascorbate need and use next biomarker to provide sufficient minerals to enhance elective protective mechanisms and strengthen the cell proton gradient.

This test is a candidate for Predictive Biomarker status

8-OHdG & Omega 3 Index Solutions

1 Personal Ascorbate Calibration

2 Colorful Super Fruits

3 Natural Methyl Cofactors

4 GGOBE Super Foods

5 VITAMIN D VITAMIN E

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8 OHdG

- **8-Oxoguanine** reflects DNA oxidative risk
- Histone repair system, transcriptases, microRNAs, telomere length
- DNA / RNA translation & transcription

Ma D, Zhu W, Hu S, Yu X, Yang Y Association between oxidative stress and telomere length in Type 1 and Type 2 diabetic patients. *J Endocrinol Invest.* 2013 Dec;38(11):1032-7. 15.

Li J, Shi L, Wu Z, Liao Y, Zhou C, Li Y, Bin X, Zeng B, Chen J. [Study of 8-OH-dG and its correlation with several cancer related gene in lung cancer tissues]. [Article in Chinese] *Wei Sheng Yan Jiu.* 2003 Jul;32(4):304-7.

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4. pH (fresh urine)

“The more acids in urine (after rest), the more magnesium buffers the cells need.”

~ Liz Lipski, How to Know if You are Magnesium Deficient –75% of Americans are, 2005

After six or more hours rest, the urine fluid equilibrates with the GU tract lining cells and you have a clinically useful assessment of metabolic acidosis risk and intracellular mineral (K & Mg).

What if... pH < 6.5... consistent with metabolic acidosis

What if... pH > 7.5... consistent with catabolic illness



Julian Seifert, 1988 to today

Goal value: 6.5-7.5

If pH < 6.5, increase immune compatible alkaline foods and mixed magnesium forms (220 mg elemental magnesium in 2 caps) along with choline citrate (1 tsp) in water or juice taken BID-QID to maintain urine pH in goal range; to correct and reverse cellular metabolic acidosis.

If pH > 7.5, consider catabolic illness with ammonia being lost into the urine as amino acids are cannibalized because cells are starved for other energy sources (sugar and fat). Occurs commonly after surgery or prolonged distress.

This test is a candidate for Predictive Biomarker status

Candidate Predictive Biomarker

Metabolic Acidosis Risk Mineral Status & pH [Ur]

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1st AM Ur pH as Predictive Biomarker

After six or more hours rest, the urine fluid equilibrates with the GU tract lining cells.

Clinically useful assessment of metabolic acidosis risk and intracellular mineral (K & Mg)

Julian Seifter, 1988 to today

Seifter JL. Integration of acid-base and electrolyte disorders. N Engl J Med. 2015 Jan 22;372(4):391-2. Integration of acid-base and electrolyte disorders.

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1st AM Ur pH as Predictive Biomarker

- Status: cell acids & minerals
- Enzyme catalysts pH sensitive
- Protein efficiency >90+% or <10%
- Mg⁺⁺ essential electrolyte

Jaffe B. The Alkaline Diet in Dignified Health: an Action Plan. Prev: VR, Ed: Bioactive Food & Dietary Interventions in Liver and Gastrointestinal Disease. Academic Press, 2012, 121.

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pH: Cells Elective Protection or Survival

Siggaard-Andersen Acid-base Nomogram

HSC Health Studies Collegium

Siggaard-Andersen O. Therapeutic Aspects of Acid-Base Disorders. Modern Trends in Acid-Base Disorders. Modern Trends in Acid-Base Disorders. Ed. DIANE S. GRAY. Butterworths, 1967, Vol. 2, 339.

Urine >6° rest,
Goal Value: pH 6.5-7.5

Excess acid wears you out



Too Acidic (<6.5)

Healthy Repair / Restore Zone



Healthy pH (6.5-7.5)

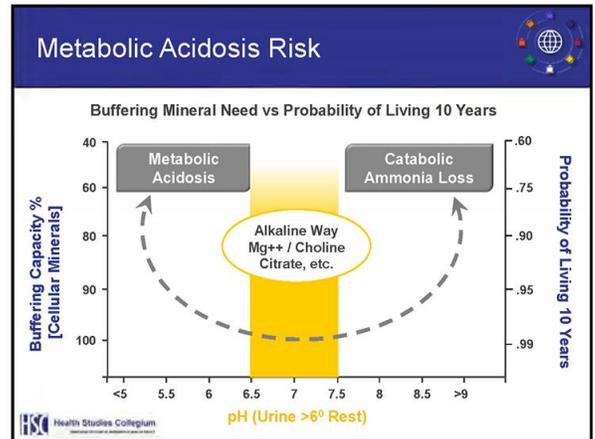
Catabolic illness tears you down



Too Alkaline (>7.5)

**1st urine >6+ hours rest
Ur equilibrates with cells**

HSC Health Studies Collegium Jaffe R, Mani J. Clinical Evidence in Favor of Specific Polyphenolics. In: Watson RR, Preedy VR & Zibadi S, Eds. Polyphenols in Human Health and Disease, Academic Press, 2013: 695-705



Biomarkers Solutions: Magnesium, Mg⁺⁺

**Mg uptake block w/
Choline Citrate:
220-880+ Mg/d elemental
magnesium**

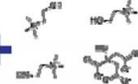
Mg⁺⁺ displaces toxic minerals, protects fats...
Choline → acetylcholine, cholinergic bile
Citrate → energizes & alkalizes

12 24 305
645 12

Mg

Weight 1.728 2

+



THE PERIODIC TABLE
Magnesium (Mg)



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Alkaline Way

Food and Chemical Effects on Acid/Alkaline Body Chemical Balance

	MORE ACID (Consume Less)			MORE ALKALINE (Consume More)		
Food Category	MEAT	GRAIN	VEGETABLES	FRUIT	LEGUMES	DRINKS
Food Category	MEAT	GRAIN	VEGETABLES	FRUIT	LEGUMES	DRINKS

HSC Health Studies Collegium Jaffe R. The Alkaline Way in Digestive Health. In: Watson RR, Preedy VR, Eds. Bioactive Food as Dietary Interventions in Liver and Gastrointestinal Disease. Academic Press, 2015, 1-21.

Alkaline Way brings healthy balance

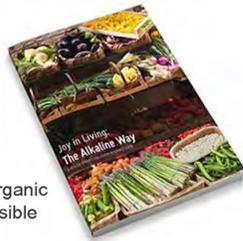
- Alkalinizing foods & water
- Activity & 1st AM Ur pH**
- Mg⁺⁺ w/Choline Citrate




HSC Health Studies Collegium Jaffe R. The Alkaline Way in Digestive Health. In: Watson RR, Preedy VR, Eds. Bioactive Food as Dietary Interventions in Liver and Gastrointestinal Disease. Academic Press, 2015, 1-21.

Alkaline Way brings healthy balance

- Alkalinizing foods & water
- Activity & 1st AM Ur pH**
- Mg⁺⁺ w/Choline Citrate
- Abdominal breathing**
- Green light & sunlight
- Eat in harmony with your nature & lifestyle**
- Eat locally grown, vine ripened, organic or biodynamically derived, as possible
- Make restorative sleep a priority**
- Work muscles & relax in = proportions



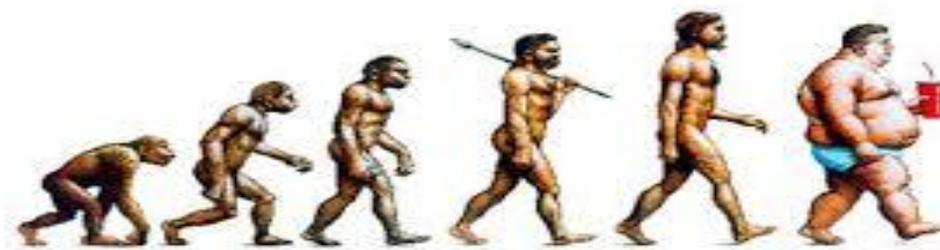
HSC Health Studies Collegium Jaffe R. The Alkaline Way in Digestive Health. In: Watson RR, Preedy VR, Eds. Bioactive Food as Dietary Interventions in Liver and Gastrointestinal Disease. Academic Press, 2015, 1-21.

Predictive Bio-Marker Tests to Determine Your Functional Age

Test Name	Test Descriptions	Predictive Goal Values
hHbA1c (Hemoglobin A1c)	Sugar/insulin/energy... AGE	<5%
hsCRP (hsC reactive protein)	Repair & inflammation immune status	<0.5 mg/L
hSHCY (hSHomocysteine)	Detox, epigenetic, methylation... Sulfur	< 6 µmol/L
hSLRA (hSLymphocyte response assay)	Immune memory/immune tolerance	No reactions
Ur pH >6 ⁺ rest (1 st AM Urine pH)	Mineral status & cell acid/alkaline balance	6.5 – 7.5
Vitamin D (25-Hydroxy-cholecalciferol)	Cell communication status	50 – 80 ng/mL
Omega-3 Index (Omega 3 to EFA ratio)	Omega 3:6 ratio; EFAs	>8%
8-OHdG (8-Oxo-Guanine)	Oxidative stress/antioxidant nucleus status	<5 ng/mg creatinine

INX Health Solutions - Longevity

The March of Evolution from Feast or Famine to Processed Abundance



and we have practice-ready solutions today to reverse or avoid the above.

Session III

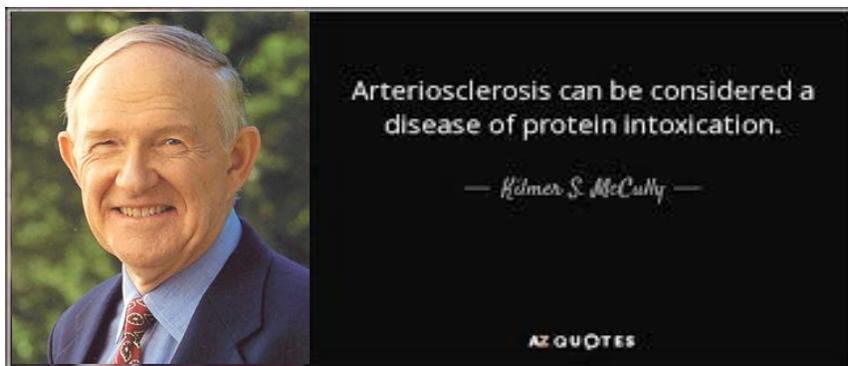
Predictive Biomarkers: Second Fab Four

5. Homocysteine (HCY, including review of preliminary findings on hsHomocysteine)

Healthier homocysteine levels are associated with “reduced cardiovascular risk, less atherosclerosis, more NOx (healthier cell responses), improved ten year survival, improved epigenetic methylation and better detoxification”

~ Russ Jaffe, Common Knowledge, 1979

Homocysteine is an independent risk factor for accelerated heart disease including CVD, ASHD, PVD, stroke as well as being an all cause morbidity predictive biomarker. It is now clear the HCY reflects the balance of methylation (healthier being lower) as well as sulfur amino acid status (deficit in sulfur rich foods can lead to depletion of all sulfur amino acids where homocysteine is low yet detoxification is impaired). HCY level is largely regulated by B complex and magnesium both of which are often depleted in people with higher Allostatic and Homeostatic loads.



Kilmer McCully, 1968 to today

Goal value: <math><6\mu\text{mol/dl}</math>

If HCY > 6, make sulfur rich foods staples in the diet (GGOBE = garlic, ginger, onions, brassica sprouts and eggs). Add 1-6 per day of methylation factors that are dissolved under the tongue before swallowing. (<http://www.perque.com/products-page/digestion/perque-vessel-health-guard-2/>)

✓ Homocysteine qualifies as Predictive Biomarker all cause morbidity / mortality test.

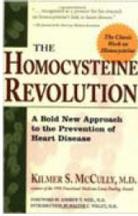
Predictive Biomarker

Homocysteine; hsHCY
2-Amino-4-sulfanybutanoic acid



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Homocysteine
<math><6</math> is Predictive Biomarker

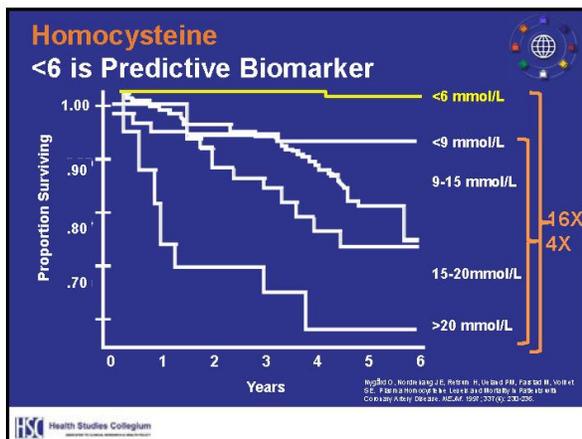



Arteriosclerosis can be considered a disease of protein intoxication.
— Kilmer S. McCully —

Kilmer S. McCully, 1968 to today

Kilmer S McCully Homocysteine, vitamins, and vascular disease prevention, Am J Clin Nutr, 2007; 86 (5): 1563S-1568S

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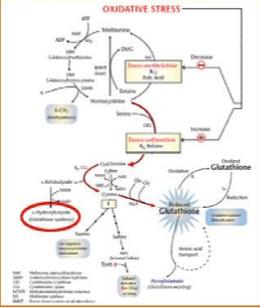


Healthy Methylation to move cells

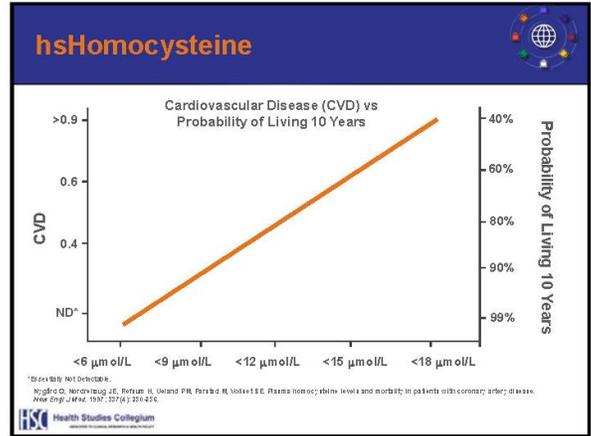
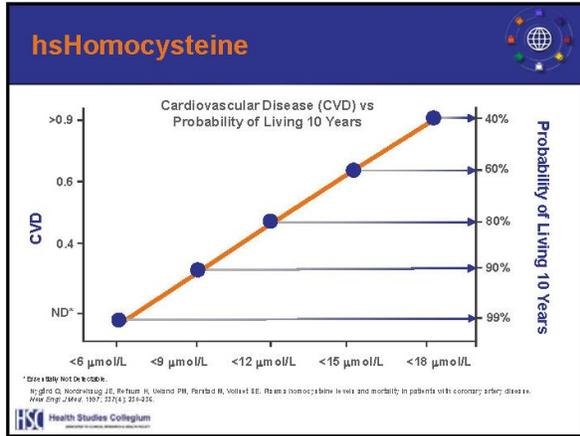
- Oxidation, detoxification, transportation
- Elective protective mode *or* survival mode for cells
- Cardiovascular & stroke *risk* cancer, AI & chronic disease

Sulfur amino acid pools

- *Often abnormal* in T21 & ASD



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hsHomocysteine Tests

Standard HCY testing methods (EDTA)

- Significant limitations
- Limits clinical application

HCY leaks from RBCs starting immediately after draw.

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hsHomocysteine (hsHCY)

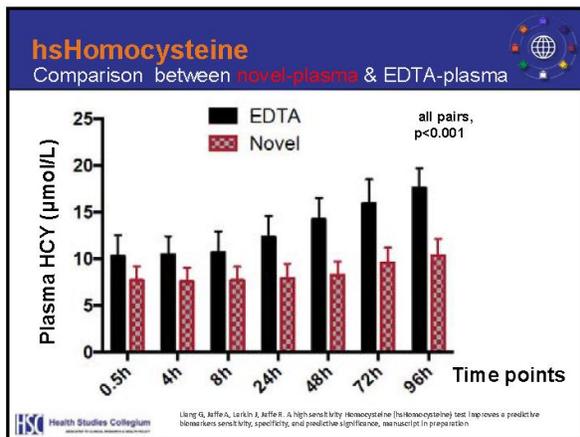
hsHCY method eliminates RBC leakage limitations.

Clinical use of hsHCY assays

- Cost effective
- Predictive
- Evidence based
- Usual and customary

Tan Y & Hoffman RM. A highly sensitive single-enzyme homocysteine assay. *Nature Protocols.* 2008; 3: 1388-1394
Liang G, Jaffe A, Larkin J, Jaffe R. A high sensitivity Homocysteine (homocysteine) test improves a predictive biomarkers sensitivity, specificity, and predictive significance, manuscript in preparation

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hsHomocysteine (hsHCY)

EDTA specimens release HCY within minutes after blood draw.

High Sensitivity Homocysteine (hsHCY) specimen viable for days.

hsHCY...
more reliable, specific, predictive biomarker

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hsHomocysteine < 6µmol/l is goal

Lively Colors: Carotenoids & B Complex

Targeted Supplementation

For healthy methylation.

- Vitamin B12 (hydroxocobalamin)
- B6
- Mixed natural folates

Lingual dot for optimum uptake

Comprehensive antioxidants

- Pure silymarin
- CoQ10
- Mixed natural carotenoids
- Mixed natural tocopherols

Micellized in a softgel for increased uptake

Chen D, Pim J, Carotenoid Action on the Immune Response. J Nutr 2014;144(1):187-191.
 Dabbas C, Miller R et al. Higher Serum Concentrations of Dietary Antioxidants are Associated with Lower Risk of Intermittent Blood Pressure During the Year after Hip Fracture. Clin Nutr 2012;31(2):343-349.
 Dwyer T, Heffernan T. Homocysteine: Review of the In-Risk Solution. Nutr J 2010;11(1):1-10.
 Jaffe H, Mann J. Clinical Evidence in favor of specific polyphenols. In: Nelson RR, Pevsler V, Dabbas C, Eds. Polyphenols in Human Health and Disease. Academic Press, 110, 436-474.

HSC Health Studies Collegium

hsHomocysteine < 6µmol/l is goal

Lively Colors: Carotenoids & B Complex

Targeted Supplementation

PERQUE Vessel Health Guard
Vitamin B12 (hydroxocobalamin), B6 & mixed natural folates for healthy methylation.



PERQUE Liva Guard Forté
Comprehensive antioxidants with pure silymarin CoQ10, mixed natural carotenoids micellized in a softgel for increased uptake



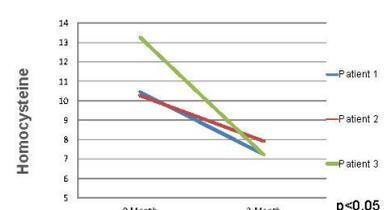
Chen D, Pim J, Carotenoid Action on the Immune Response. J Nutr 2014;144(1):187-191.
 Dabbas C, Miller R et al. Higher Serum Concentrations of Dietary Antioxidants are Associated with Lower Levels of Intermittent Blood Pressure During the Year after Hip Fracture. Clin Nutr 2012;31(2):343-349.
 Dwyer T, Heffernan T. Homocysteine: Review of the In-Risk Solution. Nutr J 2010;11(1):1-10.
 Jaffe H, Mann J. Clinical Evidence in favor of specific polyphenols. In: Nelson RR, Pevsler V, Dabbas C, Eds. Polyphenols in Human Health and Disease. Academic Press, 110, 436-474.

HSC Health Studies Collegium

hsHomocysteine < 6µmol/l is goal

Oral injection: hydroxocobalamin B12 + folates + B6

Effect on homocysteine levels: 2 lozenges/day



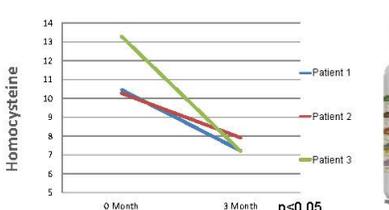
Genqing Liang, Annie Larkin, Russell Affleth: healthier homocysteine levels using oral methylation factors AACC/ASIP posters
 Jaffe H, Mann J. Clinical Evidence in favor of specific polyphenols. In: Nelson RR, Pevsler V, Dabbas C, Eds. Polyphenols in Human Health and Disease. Academic Press, 110, 436-474.

HSC Health Studies Collegium

hsHomocysteine < 6µmol/l is goal

PERQUE Vessel Health Guard

Effect on homocysteine levels: 2 lozenges/day




Genqing Liang, Annie Larkin, Russell Affleth: healthier homocysteine levels using oral methylation factors AACC/ASIP posters
 Jaffe H, Mann J. Clinical Evidence in favor of specific polyphenols. In: Nelson RR, Pevsler V, Dabbas C, Eds. Polyphenols in Human Health and Disease. Academic Press, 110, 436-474.

HSC Health Studies Collegium

Achieving hsHCY Predictive Goal

Patient Name: *John Doe* Date: _____

Address: _____

R_x *Eat immun-tolerant foods*

Priority Supplements

- Hydroxocobalamin + natural folates + B6 - B12
- Antioxidants with pure silymarin, CoQ10, and natural carotenoids - essential for increased uptake - (3)

30 mg/day, alternating cardio & weights
20 mg/day mindfulness practice

Retest in 3 months

MD: _____
Signature: _____

MORE PRIORITY SUPPLEMENTS

Super multi/mineral w/40 actives: 2x day
Buffered ascorbate powder/ tabsules:
Based on C cleanse
Magnesium glycinate/citrate/ascorbate: 2 caps + Choline Citrate: 1 tsp or to keep 1st AM urine pH 6.5-7.5

ADDITIONAL SUPPORT

Quercetin dihydrate+ OPC+ Pomegranate: 2-4 tabs/day or in a pure whey based powder: 2 scoops /day
Recycled L-glutamine with PAK: 6 caps /day
Fermented foods daily or Multi-strain, live, implantable probiotics: 6-8 caps/day

HSC Health Studies Collegium

Achieving hsHCY Predictive Goal

Patient Name: *John Doe* Date: _____

Address: _____

R_x *Eat immun-tolerant foods*

Priority Supplements

- PERQUE Vessel Health Guard 1 lozenge B/D
- PERQUE Liva Guard Forte 1 softgel QD

Additional supplements as helpful

30 mg/day, alternating cardio & weights
20 mg/day mindfulness practice

Retest in 3 months

MD: _____
Signature: _____

PRIORITY SUPPLEMENTS

PERQUE Vessel Health Guard™: 2x day
PERQUE Liva Guard Forte™ : 1x day
PERQUE Life Guard™ mini Tabsules™: 2x day
PERQUE Potent C Guard™ powder/tabsules:
Based on C cleanse
PERQUE Mg Plus Guard™ w/Choline Citrate: 2 caps + 1 tsp to keep 1st AM urine pH 6.5-7.5

ADDITIONAL SUPPORT

PERQUE Repair Guard™: 2-4 tabs/day
& PERQUE Whey Guard Repair™: 2 scoops /day
PERQUE Endura PAK Guard™: 6 caps /day
Fermented foods daily or PERQUE Digesta Guard™: 6-8 caps/day

HSC Health Studies Collegium

Homocysteine < 6µmol/l is goal

Ascorbates, Polyphenolics & Probiotics

1. Super multi/mineral w/40 actives; ✓ keep urine sunshine yellow
2. Vitamin C powder and tabsules 100% buffered, fully reduced l-ascorbate w/ K⁺, Zn⁺⁺, Mg⁺⁺ & Ca⁺⁺ ✓ amount based on 'C Cleanse'
3. Polyphenolics: Quercetin dihydrate + soluble OPC
4. Recycled Glutamine w/PAK
5. Magnesium as glycinate, ascorbate, & citrate w/ Choline Citrate to enhance uptake; ✓ 1st AM urine pH
6. Fermented foods (40 g) and 40-60+ Bn probiotics /day

HSC Health Studies Collegium

Homocysteine

BioDetox Super Foods

Garlic, ginger, onions, broccoli sprouts, eggs

GGOBE,

Sulforaphane, IP6, minerals



Glutamine recycled by PAK cell energy repair

2016. R. DeBorja et al. in: Metabolic Dysfunction Syndrome. In: Watson RR, PhD; VR, Eds. BioDetox: Food as Detox: Interventions for Diabetes, Academic Press, 2013, 410-2.

HSC Health Studies Collegium

hsHomocysteine < 6µmol/l is goal

Lively Colors: Carotenoids & B Complex



As part of comprehensive liver detox sylimarin, carnitine fumarate, CoQ10, carotenoids micellized softgel

Mixed Natural Carotenoids:
Alpha & Beta Carotene,
Astaxanthin,
Zeaxanthin,
Cryptoxanthin,
Lutein,
Lycopene

Choi, B.R. Park, J.S. Carotenoid Action on the Immune Response. JMBP, 2014;Jan; 15(1): 257-261.
D'Amico, C.R., Miller, R.R. et al. Higher Serum Concentrations of Dietary Antioxidants are Associated with Lower Levels of Inflammation: Biomarkers During the Year After Hip Fracture. Clin Nutr, 2015; 34(3): 634-644.
Eppel, J., Holtorf, P. Homocysteine: Revised Biochemical Solution. BMD in Bergen, NJ, 2012
Jain, R., Hays, J. Clinical Evidence in favor of specific polyphenolics. In: Watson RR, PhD; VR, 2009. S. Eds. Polyphenols in Human Health and Disease. Academic Press, 2010, 43-59.

HSC Health Studies Collegium

hsHomocysteine < 6µmol/l is goal

Lively Colors: Carotenoids & B Complex

B Complex *balanced* natural forms:



B1, B3, B6, B12
(hydroxocobalamin), Foliates, PABA, Inositol, Choline

Keep urine sunshine yellow

Clinical pearl:


Choi, B.R. Park, J.S. Carotenoid Action on the Immune Response. JMBP, 2014;Jan; 15(1): 257-261.
D'Amico, C.R., Miller, R.R. et al. Higher Serum Concentrations of Dietary Antioxidants are Associated with Lower Levels of Inflammation: Biomarkers During the Year After Hip Fracture. Clin Nutr, 2015; 34(3): 634-644.
Eppel, J., Holtorf, P. Homocysteine: Revised Biochemical Solution. BMD in Bergen, NJ, 2012
Jain, R., Hays, J. Clinical Evidence in favor of specific polyphenolics. In: Watson RR, PhD; VR, 2009. S. Eds. Polyphenols in Human Health and Disease. Academic Press, 2010, 43-59.

HSC Health Studies Collegium

hsHomocysteine < 6µmol/l is goal

Ascorbates, Quercetin and Probiotics

Super multi/mineral w/40 actives; ✓ keep urine sunshine yellow

Vitamin C powder and tabsules 100% buffered, fully reduced l-ascorbate w/ K⁺, Zn⁺⁺, Mg⁺⁺ & Ca⁺⁺ ✓ amount based on 'C Cleanse'

Polyphenolics: Quercetin dihydrate + soluble OPC

Recycled Glutamine w/PAK

Magnesium as glycinate, ascorbate, & citrate w/ Choline Citrate to enhance uptake; ✓ 1st AM urine pH

Fermented foods (40 g) or 40+Bn probiotics /day

HSC Health Studies Collegium

hsHomocysteine Solution

< 6µmol/L	Congratulations! Continue and Retest 2x per Year
> 6µmol/L	<p>Eat & Drink:</p> <ul style="list-style-type: none"> • ImmunoTolerant Alkaline Way diet • Targeted Supplementation: <ul style="list-style-type: none"> PERQUE Vessel Health Guard Vitamin B12 (hydroxocobalamin), B6 and mixed natural folates for healthy methylation PERQUE Live Guard Forte Comprehensive antioxidants with pure sylimarin CoQ10, mixed natural carotenoids micellized in a softgel for increased uptake PERQUE Life Guard™ mini Tabsules™ Super multi/mineral with 40 active constituents; ✓ keep urine sunshine yellow PERQUE Potent C Guard™ powder and tabsules 100% buffered, fully reduced l-ascorbate w/ K⁺, Zn⁺⁺, Mg⁺⁺ & Ca⁺⁺ ✓ amount based on 'C Cleanse' PERQUE Repair Guard™ & PERQUE Whey Guard Repair™ Polyphenolics: Quercetin dihydrate + soluble OPC PERQUE Mag Plus Guard™ Magnesium as glycinate, ascorbate, & citrate w/ PERQUE Choline Citrate to enhance uptake; ✓ 1st AM urine pH Fermented foods or PERQUE Regularity & Digesta Guard™ [40g or Bn/day] <p>Think & Do</p> <ul style="list-style-type: none"> • 30 minutes alternate days cardio & weight bearing activities • 20 minutes every day mindfulness practice

HSC Health Studies Collegium

6. Hemoglobin A1c (HbA1c, Hgb A1c, HbA1c)

“Extra sugar stuck on proteins turns to diabetes and then to the grave.”

~ Mel Brooks, 2,000 Year Old Man

The most predictive measure of *average* blood sugar, sugar energy conversion, as well as both long and short term metabolic syndrome / diabetes / cardiovascular risks.

Blood sugar and plasma insulin are subject to ‘white coat hyperglycemia’ analogous to white coat hypertension.

Hgb A1c is an independent risk factor for immune defense and repair, neuro-hormone, metabolic and microbiomic digestive health, i.e., a global measure of all cause morbidity and mortality.

Paul Gallop, 1967 to today

Goal value: <5%

If Hgb A1c is >5, increase whole, high fiber immune compatible foods. Avoid all added sugar and artificial sweeteners. Make wholeness, nature and nurture living values. Eat what you can digest, assimilate and eliminate without immune burden.

Supplement as needed based on Hgb A1c or glucose with 1-6 per day of micellized softgels containing riboflavin, chromium citrate / picolinate, standardized corosolic acid (from banaba), marah/bitter melon, French lilac, Huckleberry/Bilberry, Agnas Castus, phosphatidylcholine in pure rice bran oil. <http://www.perque.com/products-page/energy/perque-glucose-regulation-guard-forte-3/>

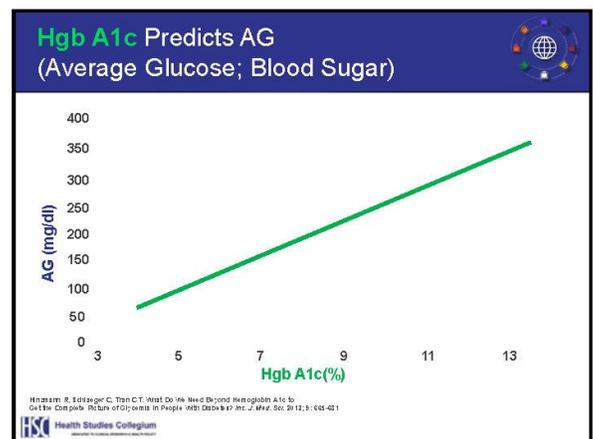
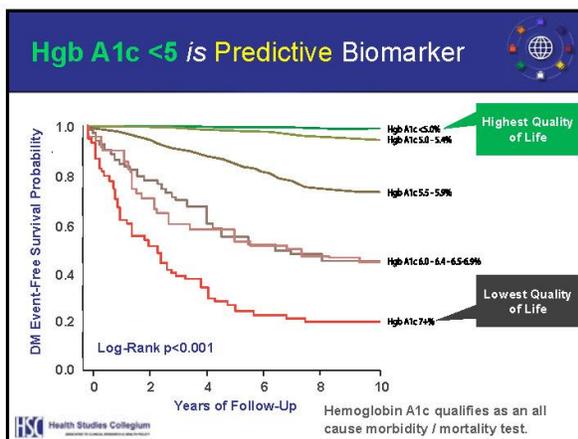
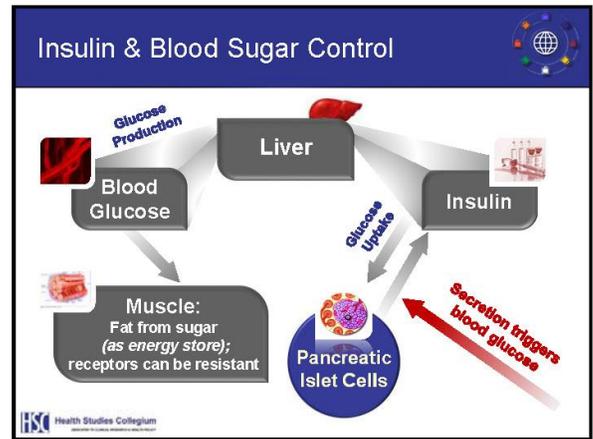
Check transit time (<http://www.perque.com/lifestyle/self-tests/transit-time/>) and if greater than 18 hours, avoid all hard to digest foods for 3 months while increasing prebiotics (40-100 g fiber/day), probiotics (40-100 Bn CFU), and symbiotics (recycled glutamine, 1.5-6 g/day). Hard to digest foods include all grains, cow dairy, soy and any genetically modified food (GMO). See the Joy in Living the Alkaline Way for tasty, easy to prepare healthier whole food choices.

✓ **Homoglobin A1c qualifies as Predictive Biomarker all cause morbidity / mortality test.**

Predictive Biomarker

**hsHemoglobin A1c =
hsHgb A1c = hsHbA1c**

HSC Health Studies Collegium



Hgb A1c >5%, herbal solutions

Herbal *symbiotic* sugar regulators when *more active forms* are then *micellized*:

- Standardized corosolic acid, 50 mg[†]
- Chromium as citrate, 250 mcg[†]
- Vanadium as ascorbate, 250 mcg[†]

Vanadium as ascorbate 250 mcg*



Hyman M, Mori J, Jaffe R. Diabetes and Insulin Resistance. Food and Nutrients in Primary Care. In: Kohnstall L, Ed. Advancing Medicine with Food and Nutrition, 2nd Ed. CRC Press, 2012. p.272-286.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VE, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2010. p.41-52.

HSC Health Studies Collegium

Hgb A1c >5%, herbal solutions

Herbal *symbiotic* sugar regulators when *more active forms* are then *micellized*:

- Standardized corosolic acid, 50 mg[†]
- Chromium as citrate, 250 mcg[†]
- Vanadium as ascorbate, 250 mcg[†]
- French lilac, 150 mg[†]

French Lilac 150 mg*



Hyman M, Mori J, Jaffe R. Diabetes and Insulin Resistance. Food and Nutrients in Primary Care. In: Kohnstall L, Ed. Advancing Medicine with Food and Nutrition, 2nd Ed. CRC Press, 2012. p.272-286.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VE, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2010. p.41-52.

HSC Health Studies Collegium

Hgb A1c >5%, herbal solutions

Herbal *symbiotic* sugar regulators when *more active forms* are then *micellized*:

- Standardized corosolic acid, 50 mg[†]
- Chromium as citrate, 250 mcg[†]
- Vanadium as ascorbate, 250 mcg[†]
- French lilac, 150 mg[†]
- Bitter Melon / Marah, 150 mg[†]

Bitter Melon / Marah 150 mg*



Hyman M, Mori J, Jaffe R. Diabetes and Insulin Resistance. Food and Nutrients in Primary Care. In: Kohnstall L, Ed. Advancing Medicine with Food and Nutrition, 2nd Ed. CRC Press, 2012. p.272-286.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VE, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2010. p.41-52.

HSC Health Studies Collegium

Hgb A1c >5%, herbal solutions

Herbal *symbiotic* sugar regulators when *more active forms* are then *micellized*:

- Standardized corosolic acid, 50 mg[†]
- Chromium as citrate, 250 mcg[†]
- Vanadium as ascorbate, 250 mcg[†]
- French lilac, 150 mg[†]
- Bitter Melon / Marah, 150 mg[†]
- Huckleberry / Bilberry, 100 mg[†]

Huckleberry / Bilberry 100 mg*



Hyman M, Mori J, Jaffe R. Diabetes and Insulin Resistance. Food and Nutrients in Primary Care. In: Kohnstall L, Ed. Advancing Medicine with Food and Nutrition, 2nd Ed. CRC Press, 2012. p.272-286.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VE, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2010. p.41-52.

HSC Health Studies Collegium

Hgb A1c >5%, herbal solutions

Herbal *symbiotic* sugar regulators when *more active forms* are then *micellized*:

- Standardized corosolic acid, 50 mg[†]
- Chromium as citrate, 250 mcg[†]
- Vanadium as ascorbate, 250 mcg[†]
- French lilac, 150 mg[†]
- Bitter Melon / Marah, 150 mg[†]
- Huckleberry / Bilberry, 100 mg[†]
- Agnus Castus, 250 mg[†]

Agnus Castus, 250 mg*



Hyman M, Mori J, Jaffe R. Diabetes and Insulin Resistance. Food and Nutrients in Primary Care. In: Kohnstall L, Ed. Advancing Medicine with Food and Nutrition, 2nd Ed. CRC Press, 2012. p.272-286.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VE, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2010. p.41-52.

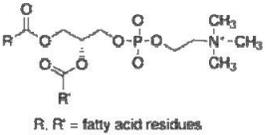
HSC Health Studies Collegium

Hgb A1c >5%, single softgel

Herbal *symbiotic* sugar regulators when *more active forms* are then *micellized*:

- Standardized corosolic acid, 50 mg[†]
- Chromium as citrate, 250 mcg[†]
- Vanadium as ascorbate, 250 mcg[†]
- French lilac, 150 mg[†]
- Bitter Melon / Marah, 150 mg[†]
- Huckleberry / Bilberry, 100 mg[†]
- Phosphatidylcholine, 71 mcg[†]

Phosphatidylcholine 71 mcg*



R, R' = fatty acid residues

Hyman M, Mori J, Jaffe R. Diabetes and Insulin Resistance. Food and Nutrients in Primary Care. In: Kohnstall L, Ed. Advancing Medicine with Food and Nutrition, 2nd Ed. CRC Press, 2012. p.272-286.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VE, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2010. p.41-52.

HSC Health Studies Collegium

Hgb A1c >5%, Manage AGEs

Herbal **symbiotic** glucose/sugar regulators
more active forms than **micellized** for 3X greater uptake

- Standardized corosolic acid, 50 mg*
- Chromium as citrate, 250 mcg*
- Vanadium as ascorbate, 250 mcg*
- French lilac, 150 mg*
- Bitter Melon / Marah, 150 mg*
- Huckleberry / Bilberry, 100 mg*
- Phosphatidylcholine, 71 mcg*

Dose based on
Hgb A1c
OR
Blood Sugar
results

Hyman M, Mann J, Jaffe R. Diabetes and Insulin Resistance, Food and Nutrients in Primary Care. In: Kohlschütter I, Ed. Advancing Medicine with Food and Nutrients, 2nd Ed., CRC Press, 2012, p 373-386.
Jaffe R. Diabetes as an Immune Dysfunction Syndrome. In: Watson RR, Preedy VR, Eds. Bioactive Food as Dietary Interventions for Diabetes, Academic Press, 2013, p 41-62.

HSC Health Studies Collegium

Hgb A1c Solution

< 5%	Congratulations! Continue and Retest 2x per Year
> 5%	<p>Eat & Drink:</p> <ul style="list-style-type: none"> • ImmunoTolerant Alkaline Way diet • Avoid all added sugars and artificial sweeteners <p>Targeted Supplementation:</p> <p>PERQUE Glucose Regulation Guard Forte Standardized corosolic acid, bitter melon, French lilac, huckleberry, Agnus Castus PERQUE Life Guard™ mini.Tabsules™ Super multimineral with 40 active constituents, √ keeps urine suprahine yellow. PERQUE Potent C Guard™ powder and tabsules 100% buffered, fully reduced l-ascorbate w/ K⁺, Zn⁺⁺, Mg⁺⁺ & Ca⁺⁺ √ amount based on 'C Cleanse' PERQUE Repair Guard™ & PERQUE Whey Guard Repair™ Polyphenolics: Quercetin dihydrate + soluble OPC PERQUE Mag Plus Guard™ Magnesium as glycinate, ascorbate, & citrate w/ PERQUE Choline Citrate √ enhance uptake, √ 1P AM urine pH PERQUE Endura PAK Guard Recycled glutamine + PAK Fermented foods or PERQUE Regularity & Digesta Guard™ [40g or Bn l/day]</p> <p>Think & Do</p> <ul style="list-style-type: none"> • 30 minutes alternate days cardio & weight bearing activities • 20 minutes every day mindfulness practice. <p>Check transit time (http://www.perque.com/lifestyle/self-tests/transit-time/)</p>

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Pro Repair /Detox Nutrients

1 Personal C Cleanse



Only 100% l-ascorbate, fully reduced & buffered

2 Dark fruits; super foods



Polyphenolics

3 B... methyl cofactors



Balanced Natural Forms

4 BioDetox



Ascorbates & Greens

5 High sulfur foods



GGOBE

6 Omega 3: EPA/DHA



Purer, uncontaminated, micellized = better uptake

Jaffe R, Mann J. Clinical Evidence in Favor of Specific Polyphenolics. In: Watson RR, Preedy VR, Zibadi S, Eds. Polyphenols in Human Health and Disease, Academic Press, 2013, 695-705.
Jaffe R. Cardio-protective Nutrients. In: Watson RR, Preedy VR, Eds. Bioactive Food as Dietary Interventions in Cardiovascular Disease, Academic Press, 2013, p 103-113.

HSC Health Studies Collegium

PERQUE Personalized detox: 30-60 day



HSC Health Studies Collegium

7. Vitamin D3

“ While a neurohormone rather than a ‘vitamin’, cholecalciferols in the body regulate cell division, bone renewal, and help set the neurohormonal system to neutral and resilient.”

~ Mike Holick in conversation with Russ Jaffe, 2010

While initially thought to be a vitamin, calciferols are neurohormones helping regulate cell proliferation and hard tissue (bone) renewal.

While 20 minutes exposure of skin to sunlight is enough to generate vitamin D in the skin, few people expose more than 8% of the body surface to the sun and then rarely for even 20 minutes a day. Sun is a great source of healing; antioxidants including selenomethionine (1 mg/day) are needed to avoid photooxidation (sunburn).

25 OH-D (25 hydroxycholecalciferol)



Mike Holick, 1995 to today

Goal value: 50-80 ng/ml

If levels are < 50, increase oral liquid vitamin D (400 IU with Rosemary oil) because many people have enteropathy and do not absorb vitamin D much from the gut, according to Dr Holick. Take as much liquid vitamin D as needed to bring the level into the goal range. For many people this is 5-25 drops/day; 2,000-10,000 IU/day.

<http://www.perque.com/products-page/bone/perque-d3-cell-guard-2/>

Vitamin D is a candidate Predictive Biomarker test.

Candidate Predictive Biomarker



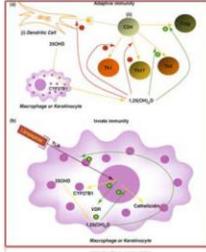
Vitamin D (25 OH-Cholecalciferol)





Vitamin D is Primary Biomarker





Liver & Kidney hydroxylate
adhesion molecule between cells

Communicates enough is enough

Bone, vessel, & brain health

Anti-cancer surveillance
40+ MM poorly absorb D... mucosal uptake!

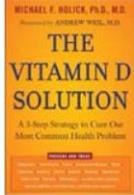


Vitamin D is Primary Biomarker



**Mike Holick,
1995 to today**





"I recommend to all of my patients that they should take 2000-3000 IU of vitamin D a day from dietary sources, sensible sun exposure and supplements." - Mike Holick



Vitamin D 50-80 ng/ml Goal Value



**500 IU cholecalciferol/drop
in MCT w/Rosemary Oil**



**hsCRP, IL-10 &
Insulin Resistance**

Rooney RP. Vitamin D in Health and Disease. *Clin J Am Soc Nephrol*. 2008; 3(5): 1035-1041.
Shah, E. A Proposed Study of Vitamin E Therapy. *Can Med Assoc J*. 1972; 106(10): 1057-1058.



PERQUE D3 Cell Guard



- Strengthens the immune system –regulates T cell production
- Supports bone, muscle, prostate organ and colon system health
- Improves cognitive function and mental alertness; clears brain fog
- Improves insulin resistance; better blood sugar regulation
- Enhanced uptake with Medium Chain Triglycerides (MCT); rosemary extract




5-25 drops /day (2000-10,000 IU/day)



8. Omega 3 index

“Nature, nurture, and traditional whole food diets contained health sustaining balanced amounts of Omega 3 and Omega 6 fats, no trans fats and no fructose from corn. Today’s Omega 6 excess feeds, fuels and sometimes causes the epidemic of inflammatory, autoimmune, chronic degenerative illnesses that have, in just two generations, become the greatest killers on the planet.”

~ Artemis Simopolous, Center for Nutrigenomics and Nutrigenetics, 2002

NHANES IV and similar surveys finds that many people consume 50 times more omega 6 than omega 3 essential fats (diet and supplements). Such levels are associated with enhanced inflammation and immune imbalance including Th1 and Th2 diseases.

Healthier people consume roughly equal amounts of each and then protect the essential fats with antioxidants and protective minerals (particularly magnesium).

ALA only goes to EPA & DHA in healthy people (desaturase problems)

LA only goes to GLA & AA in healthy people (desaturase problems)

Use nitrogen distilled EPA/DHA micellized in MCT



Bill Harris, Ph.D., 1985 to today

Goal value: > 8%

If < 8%, increase deep water oily fish intake to 3-4 times per week and/or supplement with nitrogen distilled marine lipids (3-6 g/day of EPA/DHA combination). You need DHA for brain and body; you need EPA for body and brain. <http://www.perque.com/products-page/digestion/perque-epadha-guard-2/>

Omega 3 Index is a candidate Predictive Biomarker test.

Candidate Predictive Biomarker



Essential Fats: Omega-3 Index



HSC Health Studies Collegium

Omega-3 Index




High Omega 6/3 ratio

- Increased inflammation
- Immune imbalance
- Th1 Th2 diseases

William Harris, Ph.D.,
1985 to today

Simopoulos AP. The importance of the ratio of omega-6/omega-3 essential fatty acids. *Biomed Pharmacother.* 2002 Oct;56(8):365-79.
Harris WS and von Schacky C. The Omega-3 Index: A New Risk Factor for Death from CHD? *Preventive Medicine* 2004;39:212-220.

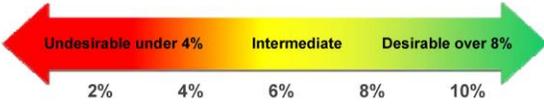
HSC Health Studies Collegium

Omega 3 Index >8% Goal Value



SAMPLE RESULT

HS-Omega-3 Index® = 16.4%



2% 4% 6% 8% 10%

Your **hsOmega-3 Index** is within the target range.
You are advised to maintain your current intake of omega-3 fatty acids.

Upadhyay RK. Emerging risk biomarkers in cardiovascular diseases and disorders. *J Lipids* 2015;2015:971453.
Albert BB, Derraik JG, Brennan CM, Biggs JB, Smith GC, Garg ML, Cameron-Smith D, Hofman PL, Cutfield WS.
Higher omega-3 index is associated with increased insulin sensitivity and more favourable metabolic profile in middle-aged overweight men. *Sci Rep.* 2014 Oct 21;4:6697.

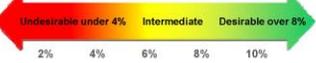
HSC Health Studies Collegium

Omega Quant Omega 3 Index




HS-Omega-3 Index® = 16.4%
Reference Range*: 0.5% = 10.6%

Omega 3 Index
Goal: 8%



2% 4% 6% 8% 10%

Your **HS-Omega-3 Index** is within the target range. You are advised to maintain your current intake of omega-3 fatty acids.

Fatty Acids Ratio	
Omega-6:Omega-3	(0.0 – 14.9* 1.3)

Omega 6: Omega 3 Ratio Goal: 1

HSC Health Studies Collegium

PERQUE EPA/DHA Guard™

- Distilled, Nitrogen protected
- Fat soluble toxins *gone*
- Restores cell membrane flexibility
- Toxic minerals *gone*
- *Magnesium protects EFAs*



HSC Health Studies Collegium

Omega-3 Index & 8-Oxoguanine Ur Oxidative Risk; Antioxidants Needed

CoQ10
300-1200 mg/d w/
Tocopherols in
Rice Bran Oil

EPA/DHA
3-6+ g/d,
nitrogen
distilled

Deep water
oily fish 3-4
times/week

Silymarin,
l-Carnitine
fumarate,
Lycopene,
Carotenoids

? Liver
Detox:

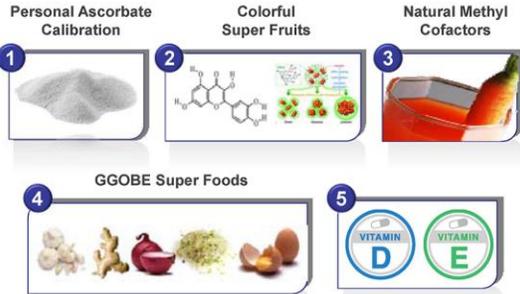
Comprehensive
Super Multi
(40 actives)



HSC Health Studies Collegium

Omega 3 Index & 8-oxoguanine Solutions

- 1 Personal Ascorbate Calibration
- 2 Colorful Super Fruits
- 3 Natural Methyl Cofactors
- 4 GGOBE Super Foods
- 5 VITAMIN D, VITAMIN E



HSC Health Studies Collegium

Qualified Predictive Biomarkers Personalized, Evidence-Based, Comparative

hsHgb A1c: Sugar, insulin... AGEs

hsCRP: Inflammation, repair disease

8 oxo-guanine: Oxidative stress... ALEs

hsHomocysteine: Methylation, detox, Sulfur

Omega 3 Index: Omega 3:6, EFAs

hsLRA: Immune Tolerance

Vitamin D: Cell talk & adhesion

1st AM urine pH: cell acidosis risk



Jaffe R. Predictive Biomarkers Provide Evidence for Comparative Effectiveness Research, HSC 90_13-01 Advisory on Predictive Medicine & Health Prevention.
Greenwald TL, Seeman TE, Ryff CD, Karlamangla A, Singer BH. Combinations of Biomarkers Predictive of Later Life Mortality. PNAS, 2006; 103 (28): 14138-14143.

HSC Health Studies Collegium

Qualified Predictive Biomarkers Personalized, Evidence-Based, Comparative

Hgb A1c: Sugar, insulin... AGEs

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Omega 3 Index: Omega 3:6, EFAs

LRA by ELISA/ACT: Immune Tolerance

Vitamin D: Cell talk & adhesion

1st AM urine pH: cell acidosis risk



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Inflammation Rethought = Remove Repair Blocks

Diabetes

Auto-immune Disease

Arthritis

Inflammation

Alzheimer

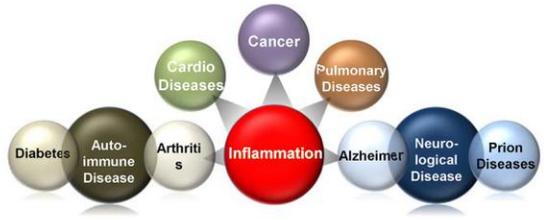
Neuro-logical Disease

Prion Diseases

Cardio Diseases

Cancer

Pulmonary Diseases



Grundy SM, Cleeman J, Daniels SR, Donato KA et al. Diagnosis and management of the metabolic syndrome: An American Heart Association/National Heart, Lung, and Blood Institute Scientific Statement. Circulation. 2005;112(17):2701-2703.
Kahn R, Buse J, Ferrannini E, Stern M et al. The Metabolic Syndrome: Time for a Critical Appraisal: joint statement from the American Diabetes Association and the European Association for the Study of Diabetes. Diabetes Care. 2005 Sep;28(9):2289-2304.
Jaffe R, Mann J. Rethink Health: inflammation is Actually Repair Defect: Using Physiology First to Achieve Better Outcomes, Part 1: Value and Importance of Understanding Inflammation as Repair Defect. Townsend Letter for Doctors and Patients. 2013, Jun (359): 68-74.

HSC Health Studies Collegium

Summary



Healthy immune system defends and repairs

Essential predictive high sensitivity assessment techniques include detecting delayed hypersensitivities, hsCRP, HbA1c and homocysteine

Elective predictive high sensitivity assessment techniques include pH measurement, Vitamin D3, Omega 3 index and 8 oxo-guanine

Living the alkaline way & using personalized antioxidant/supportive nutrient intake is key for adequate repair and immune system function.

Session IV

Dr. Erika Mennerick presents cases and experience that keep her excited about practice

Clinical Applications of PERQUE Products, LRA by ELISA/ACT tests, and the Concepts of Repair Deficit



Erika K. Mennerick,
DC, Cert. MDT



CASE 1: Jeanni

- 31yoF presents 10/13 with Dx ulcerative colitis
- OTC “cleanse” 06/13 triggered bloody stools.
- PMH: ‘large polyp’ removed from small intestine as infant. Mother’s Dx IBS.
- Dietary notes:
 - Limited dairy (creamer in coffee 1/day)
 - Soy milk caused bleeding and urgency
 - Crackers cause cramping
 - Does OK with Ezekiel bread (sprouted grain)
- GI doc prescribed Lialda
- Doctors Data Microbiology stool analysis: ‘slight imbalance but overall good’
- **LRA by ELISA/ACT™** recommended
- **PERQUE™** supplements
 - Life Guard
 - Triple EFA Guard
 - Bone Guard Forté 20
 - Endura/PAK Guard
 - Digesta Guard Forté 10
 - Hematin Anemia Guard
 - Activated B12 Guard
 - Repair Guard

- 12/13: Abdominal cramps (?reaction to Lialda?), hospitalized
 - Stressful morning at work
 - Abnormal stool over a week, except blood and mucus
 - Weight dropped to 129# (normally 146#)
 - CT showed colitis but no impaction
 - Little sleep due to pain and cramping
 - Fear of taking supplements due to nausea
 - Fear of leaving the house due to urgency
- Put on basic diet: Broth, quinoa or brown rice, berries, melon, lower fiber veggies, fish, almond butter, aloe juice, tea, whey protein (if tolerated)
- GI doc Rx prednisone... wanted 2nd opinion
- Rushed ELISA/ACT LRA B4 starting pred
- Drew labs December 23rd, 2013
- FedEx/UPS didn't get them to the lab on the 24th. I had her redrawn on the 26th.
- ELISA/ACT ran *both* samples on 12/26 & 12/27 respectively to compare for internal testing.

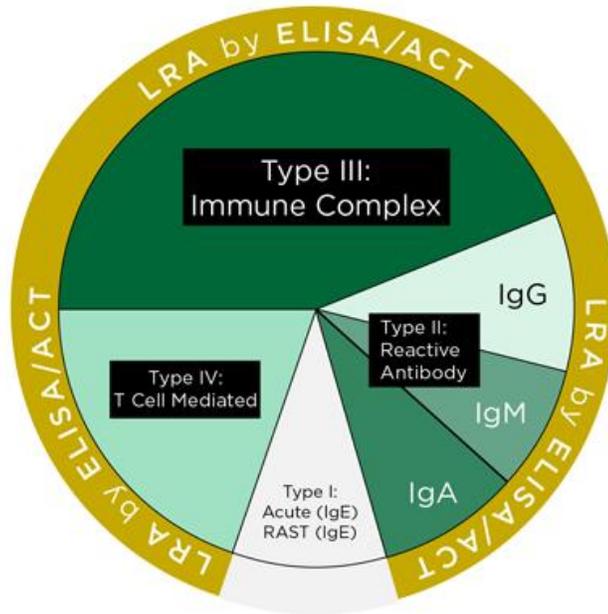
STRONG REACTIONS		<u>Avoid for at least 6 months.</u>
• Corn (Maize)	• Tea, Black	• Olive
• Bay Leaf	• Peppermint	• Gum, Xanthan
• Carbon Tetrachloride		
<u>STRONG FOOD GROUP(S):</u>		
• CORN		
Sugar, corn		
.....		
MODERATE REACTIONS		<u>Avoid for at least 3 months.</u>
• Orange	• Lemon	• Tomato
• Ginger	• Sole/Flounder/Halibut	• Malt
• Pinene	• FD&C Blue #2	• FD&C Yellow #10
• Toluene	• Xylene	
.....		
Thus of the 315 substances tested, reaction is noted to 18 items and 1 food group(s).		
<p>While both strong and moderate reactions are equally burdensome to your immune defense and repair systems, we have found that it takes about half as long to restore tolerance of moderate reactions as compared to the strong ones.</p>		

- Thus began her long, slow path to healing
- **PERQUE** supplements
 - Life Guard
 - Endura/PAK Guard
 - Repair Guard
 - Potent C Guard Powder
 - D3 Cell Guard (previous labs showed 26 ng/mL)
 - Digesta Guard Forté 10
 - Hematin Anemia Guard
 - Vessel Health Guard & Activated B12 Guard
- Mid-January 2014
 - HgB dropped to 7.7 (transfusion)
 - CRP (not hs) 29.96 (<3.0 mg/L lab reference)
- March 2014
 - CRP: 7.06
 - Still iron deficiency anemia but improving
 - Only having BM's BID and only minimal blood
 - Halted weight loss (lowest was just under 100#)
 - No abdominal pain with BM's
- December 2014
 - CBC "normal"
 - HgB: 12.9 "Can I go off of Hematin??"
 - CRP: 1.14
 - Ferritin: 14 (40-70 optimal)
- April 2015
 - Food journaling has made all the difference
 - Still walks a fine line but has tools
 - Specific Carbohydrate Diet (avoiding particular chains of sugars that feed dysbiosis) & SED. Working toward Paleo.
 - 1 formed BM/day

- Symptoms: new food or too much of a good food, stress, lack of sleep
 - Any blood in stools... something is awry
 - Goes back to intro foods: Broth, plain chicken, zucchini, carrots, squash
 - Increased Repair Guard
- Great energy
- Better immunity

Jeanni's Current Diet

- Homemade yogurt well tolerated; whole organic milk (grass-fed), looking to switch to raw in the summer
- Fermented food with every meal: Yogurt, sauerkraut, fermented carrots, & Digesta Guard Forté 10
- Good quality protein: Grass fed beef, bison, pastured pork, local chicken
- Wild fish except LRA by ELISA/ACT reactive items
- Vegetables: No peppers, no legumes except green beans and peas. Lots of squash.
- Fructose: Fruit (1 piece per day) + avocado
- Eggs from local farmer
- Coconut flour (reacted to almond flour)
- Started with cashew baking
- Food rotation
- Bone broth: 1-2 times per day
- Still on Asacol... reducing slowly, down to 3/day from 6/day
- Weight back up to 132#
- Amenorrheic but breast tissue coming back
- Acupuncture 1/mo.
- Family healthier: Husband lost weight and kids eating healthier too!
- F/U: Repeat LRA by ELISA/ACT soon



CASE 2: John

- 52 yo Male presented for chiropractic care
- Neck pain/stiffness with intermittent B/L paresthesia in finger tips, fatigue, poor sleep
- Tender everywhere
 - Fibromyalgia??
 - Vitamin D deficiency can be a cause musculoskeletal pain, SAD, hypertension, migraine HA, CVD, OA (Alex Vasquez, DC, ND, DO; John Cannel, MD; Michael Holick, MD) www.vitamindcouncil.org
 - Refused to adjust him without labs

DOB: 10/22/1962	AGE: 52			
Gender: M	Fasting: Y	Collected: 04/06/2015 / 10:00 CDT	Received: 04/07/2015 / 02:45 CDT	Reported: 04/08/2015 / 00:03 CDT
Phone: NG		(* A Copy From)		Attn: REPORTING/BILLING ONLY ACCOUNT 1 TITUS RD WASHINGTON DEPOT, CT 06794-1516
Patient ID: NG				
Test Name	In Range	Out Of Range	Reference Range	Lab
LIPID PANEL				
CHOLESTEROL, TOTAL		259 H	125-200 mg/dL	CB
HDL CHOLESTEROL	69		> OR = 40 mg/dL	CB
TRIGLYCERIDES		329 H	<150 mg/dL	CB
LDL-CHOLESTEROL	124		<130 mg/dL (calc)	CB
Desirable range <100 mg/dL for patients with CHD or diabetes and <70 mg/dL for diabetic patients with known heart disease.				
CHOL/HDLRATIO	3.8		< OR = 5.0 (calc)	CB
NON HDL CHOLESTEROL		190 H	mg/dL (calc)	CB
Target for non-HDL cholesterol is 30 mg/dL higher than LDL cholesterol target.				
HS CRP	0.8		mg/L	CB

HOMOCYSTEINE 10.9 <11.4 umol/L
 Homocysteine is increased by functional deficiency of folate or vitamin B12. Testing for methylmalonic acid differentiates between these deficiencies. Other causes of increased homocysteine include renal failure, folate antagonists such as methotrexate and phenytoin, and exposure to nitrous oxide.

COMPREHENSIVE METABOLIC PANEL
GLUCOSE 121 H 65-99 mg/dL
 Fasting reference interval

HEMOGLOBIN A1c 6.5 H <5.7 % of total Hgb
 According to ADA guidelines, hemoglobin A1c <7.0% represents optimal control in non-pregnant diabetic patients. Different metrics may apply to specific patient populations. Standards of Medical Care in Diabetes-2013. Diabetes Care. 2013;36:s11-s66

For the purpose of screening for the presence of diabetes
 <5.7% Consistent with the absence of diabetes
 5.7-6.4% Consistent with increased risk for diabetes (prediabetes)
 >or=6.5% Consistent with diabetes

This assay result is consistent with diabetes mellitus.

QUESTASSURED 25-OH VIT D, (D2,D3), LC/MS/MS

Lab: CB

Test Name	Results	Reference Range
VITAMIN D, 25-OH, TOTAL	15 L	30-100 ng/mL
25-OHD3 indicates both endogenous production and supplementation. 25-OHD2 is an indicator of exogenous sources, such as diet or supplementation. Therapy is based on measurement of Total 25-OHD, with levels <20 ng/mL indicative of Vitamin D deficiency, while levels between 20 ng/mL and 30 ng/mL suggest insufficiency. Optimal levels are > or = 30 ng/mL.		
VITAMIN D, 25-OH, D3	15	ng/mL
Reference Range Not established		
VITAMIN D, 25-OH, D2	<4	ng/mL
Reference Range Not established		

- Currently: Eats well at dinner but starves himself the rest of the day
 - Starvation = STRESS to the body
 - Results in greater storage of abdominal & visceral fat
 - Malnourished obesity
- Does he have fibromyalgia???
 - Vitamin D deficiency
 - Inferred Magnesium (all mineral) deficiency

Treatment

- Dietary counseling
 - Avoid sugar (discussed cravings & substitutions)
 - Remove dairy (diabetes)
 - Eat more frequently: Hard boiled egg, smoothie, Ezekiel bread & almond butter, whey protein, veggies, nuts seeds, sprouts
 - Sleep 7-9 hours/night for REPAIR
 - Decrease alcohol intake: currently 10 beers/night (on average)

PERQUE Supplementation

- Life Guard: 3/day
- D3 Cell Guard: 20 drops/day (10,000 IU)
 - Monitor Calcium at 2 weeks if pt is on hydrochlorothiazide
 - Relative contraindication with warfarin
 - Expected outcomes: Better glucose control, decreased musculoskeletal pain, better energy levels
- Mg Plus Guard: 3/day
 - Vitamin D requires Mg in conversion process
- Glucose Regulation Guard Forté: 1-2 with each meal
 - Chromium deficiency associated with severe insulin resistance, hyperglycemia, hypertriglyceridemia, and painful neuropathy.*
- EPA/DHA Guard: 3/day
- Vessel Health Guard: 3/day
 - Reduce Homocysteine levels

*<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3313629/> ISRN Endocrinol. 2012; 2012: 103472. Published online 2012 Mar 15

Follow-up

- Support system: Wife comes to appts
- 1 week on supplements and dietary changes
 - Sleeping better
 - Increased energy
 - Eating more frequently

The kind of patient that keeps me excited about practice!

CASE 3: June

- 51 yo Female (September 2013)
- Dx: Chronic Inflammatory Demyelinating Polymyopathy (CIDP) Chronic Guillain-Barre Syndrome
- 20 years since first episode
- Hx: Long-term prednisone usage
- Symptoms: R hip weakness “draggy,” hand symptoms B/L worse at night, lack of hand coordination & easy fatigue, D4-5 worse
 - Subtle. Nothing detected on neuro exam, but...
- Brain MRI & EMG/NCV: WNL
- ESR 12, hs-CRP 3.22, ANA positive 1:320
- Vitamin D 25.4 ng/mL
- Mostly managed by other docs (neuromuscular specialist & rheumatologist at Northwestern Medical in Chicago).
- During the flare was put on prednisone
- Experienced rapid relief with 30mg/day (October 2013 - April 2014)
- Came for musculoskeletal care and vitamin recommendations
- Saw a PT for general strengthening exercises

Supplements

- D3 Cell Guard 10,000 IU daily
 - Loading dose of 25,000 IU/day for 3 days
 - Levels went from 25 ng/mL (September) to 45 (November) to 53 (early January)
 - PCP told her to decrease dose
 - Vitamin D deficiency links to auto-immune disease
- EPA/DHA
 - Previously taking Nordic Naturals (side effects)

PERQUE Supplements

- Life Guard
- Bone Guard Forté 20 (trouble with constipation)
- Potent C Guard Powder
- Repair Guard
- EPA/DHA Guard
- D3 Cell Guard
- **PERQUE** “Steroid Bridge”
 - Prednisone interferes w/the LRA by ELISA/ACT tests
 - TNF inhibitors: 2 weeks after last dose
 - Email the lab to receive the protocol
- Increased Repair Guard & Potent C as she weaned off prednisone (6-7 months on it, 30mg/day at the highest)

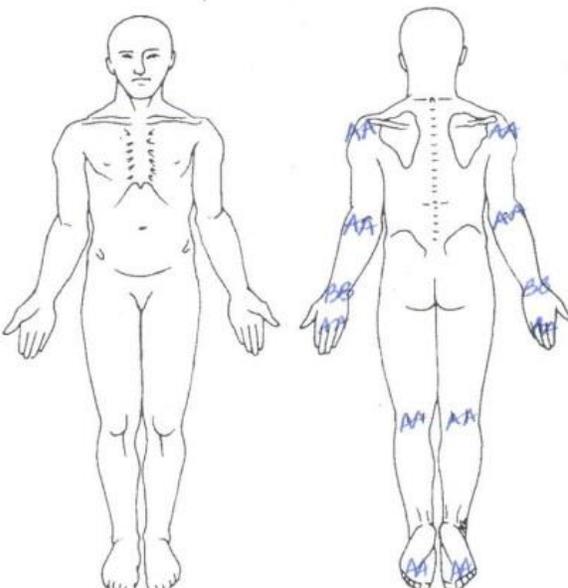
June NOW

- She still takes **PERQUE** supplements
- Visit 3-6 weeks for maintenance care
- Tx lateral epicondylitis and chronic neck/upper back pain stiffness
- Active, working, yoga, run/walk, impeccable diet, dating
- LRA by ELISA/ACT tests????someday!

CASE 4: Mary

- 46yoF “Arthritic Pain” acute onset 6/2006
- Constant burning, aching, stiffness
- Affected work, sleep, recreation, daily routine

Please mark area(s) of injury or discomfort as shown in the example below.
 NN= Numbness PP=Pins & Needles AA=Aching BB=Burning SS=Stabbing



Please rate your pain on the scale below:
(0=No Pain / 10=Severe Pain)

Today's Pain

0 1 2 3 4 5 6 7 8 9 10

Pain when it's at it's worst

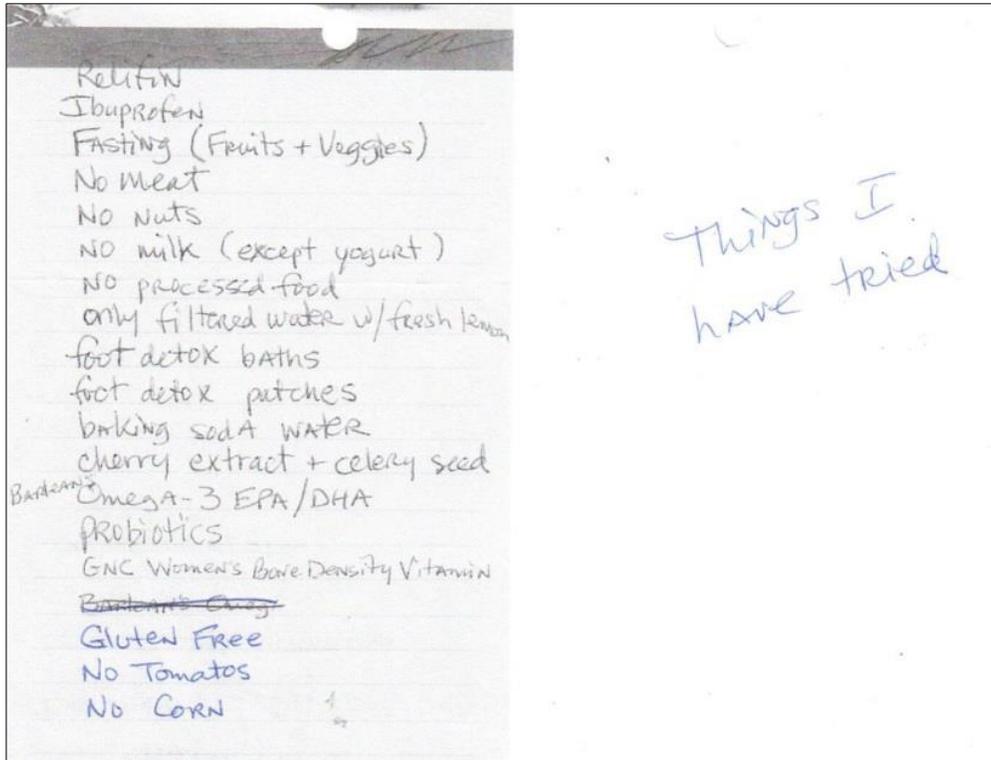
0 1 2 3 4 5 6 7 8 9 10

Typical Pain

0 1 2 3 4 5 6 7 8 9 10

w/ Ibuprofen

- Medications / PMH
 - Type I Diabetes: Lantis 13 units, Novalog 1 unit/15g carb
 - Hypothyroid (TSH 7.44): Armour 30mg BID
 - Ibuprofen 100mg TID or more PRN
- Previous Labs
 - Negative Epstein-Barre, ANA, Lyme Disease IgG, IgM; HIV
 - CBC: Hypochromic microcytic anemia (low HgB, Hct, MCV, MCH, MCHC; high RDW)
 - Hemoglobin A1C 6.4% (<6% non-diabetic)
 - Rheumatoid factor: 21 & 22 (<14 normal)
 - Thyroid Peroxidase Ab >100 (<30 normal)
 - Cardio CRP 31.9 (<0.5 optimal)
 - Heavy metal testing (Genova): Negative



ELISA/FACT LIA RESULTS August 20, 2009

STRONG REACTIONS *Avoid for at least 6 months.*

• Peanut	• Nutmeg	• Rice, Wild
• Rosemary	• BHT	

MODERATE REACTIONS *Avoid for at least 3 months.*

• Broccoli	• Crab	• Sucanat
• Molasses	• Helminthosporium sativum	• Gum, Xanthan
• Brilliant Black	• Chlordane	• Dibutyl Phthalate
• Tetrachloroethylene		

MODERATE FOOD GROUP(S):

• SUGARS

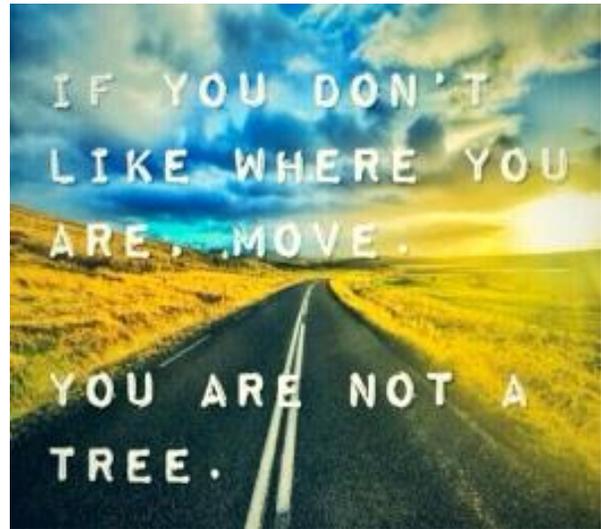
- Beet
- Cane
- Corn
- Honey
- Maple
- Molasses
- Sucanat

Thus of the 313 substances tested, reaction is noted to 15 items and 1 food group(s).

While both strong and moderate reactions are equally burdensome to your immune defense and repair systems, we have found that it takes about half as long to restore tolerance of moderate reactions as compared to the strong ones.

Lessons

- Not just foods
 - Prep instructions
 - Environmental exposures
- What happens in the past...
 - Dr. Jaffe/Holick/Strehl story
- Give them direction



Facilitating Repair & The Alkaline Way

- Nutritional sufficiency & hydration
- Removal of toxins
- Elimination of food sensitivity load
- Thoughts, Goals, Hopes, Dreams, Reality
- Relationships & Support System
- Sleep
- Sympathetic / Parasympathetic balance
 - Alkaline Way
- Quality of life

Other Patients

- Chronic diarrhea: Gliadin & dairy
 - Weight loss resistance; 10# lost in first 2 weeks
- Facial pain, nausea, & vomiting BPPV: Soy
- Chronic nasal congestion: Beef, wine
- Fatigue, allergic rhinitis:
Cottonseed (kids' 4-H pigs)
- Pediatric constipation: Sugar
- Rheumatoid arthritis:
Berries, sugar, chemicals from farming

Predictive Biomarkers in Practice

Select the practice model that best fits your personal style. Each of the five (5) below use Predictive Biomarkers and Goal Value based care differently. All include advanced evidence based integrative care to achieve superior outcomes at lower risk and costs.

In all cases, review with your local legal and business experts your state and national regulatory permissions and restrictions. Also verify peer standards of practice as they apply to your particular integrative, holistic, comprehensive, patient centered, evidence based approach. Being a Fellow helps. Being cross-trained helps. Being cross-certified helps. Being caring and competent, kind and considerate help most of all.

Your joy in practice; your sense of quiet confidence as appreciated by staff, clients and colleagues grow when this approach is practiced. Taken together, these fulfill the triple aim of achieving better health, better care, and lower cost while employing evidence and experience, science and wisdom to evoke healing responses by removing obstacles to recovery.

1. **Full service including phlebotomy and office based counseling of lab results**

- Apply for certification training in Predictive Biomarkers available through Health Studies Collegium. Initial certification online including how to use goal values to personalize a program to enhance function by improving epigenetic reserves, resilience and making evidence based individual biochemical needs.
- Self-assessments can be sources of revenue, motivation and reinforcement of your message. An example is intestinal digestive transit time: <http://www.perque.com/lifestyle/self-tests/transit-time/> .
- Multiple active & passive revenue streams based on doing good & thus doing well.
- Active internal communication with staff and team members.
- Proactive communication with community and colleagues about preferred referrals.
- Develop program and sign up for six or more months at a time of regular sessions. Have an overview to help communicate how much value the person will obtain and how effective the program has been for others.

- Use the CLIA, AAB, or CAP certified lab of your choice. **ELISA/ACT** Biotechnologies (www.ELISA/ACT.com, 1.800.553.5472) and **PERQUE** (www.PERQUE.com, 1.800.525.7372) are available to help guide you.
- Take one client or colleague to breakfast or lunch once a week.

2. **Clinical practice only (paid for time, caring and competence; few procedures)**

- Develop program and sign up for six or more months at a time of regular sessions. Have an overview to help communicate how much value the person will obtain and how effective the program has been for others.
- Take one client or colleague to breakfast or lunch once a week.
- Develop staff who can extend you so that your qualities can be focused on patients (60%), team (20%) and yourself (20%).

3. **Referral practice with consumers following up on recommended tests / assessments / procedures**

- Develop program that focuses on your particular interest: Inflammation or Autoimmune conditions or Epigenetics or Microbiome and Metabolome or *Your Method*.
- Use self-assessments to differentiate your practice and to bond clients to your practice.
- Apply for certification training in Predictive Biomarkers available through Health Studies Collegium. Initial certification online including how to use goal values to personalize a program to enhance function by improving epigenetic reserves, resilience and making evidence based individual biochemical needs.
- With volume testing a personalized landing page and report is an option.
- Several tests can be done reliably on finger stick samples: Hgb A1c, hsCRP, vitamin D and Omega 3 index. With first morning urine pH and 8 oxo-guanine being urine tests, it leaves only plasma homocysteine (HCY) and immune tolerance (LRA by ELISA/ACT cell cultures) tests as needing whole blood and special processing.
- Take one client or colleague to breakfast or lunch once a week.
- Option to get certified through IAACN, ACN/ANA, HSC, IFM, AHIM, AAEM...

4. **Work for a practice that sets my standard of care**

- Can make recommendations to clients, friends and family outside of conventional standard of care: Refer clients to one stop access through 'direct access' testing lab (prefer one that includes full interpretation).
- Take one client or colleague to breakfast or lunch once a week.
- With volume, personalized landing page and report may be options (contact client services at 1.800.553.5472, 1.800.525.7372, or 1.703.796.0460).
- Invite colleagues to present at lunch and learn or informal breakfasts or dinners about what you are learning here. Experts from outside often make it safe to discuss topics. Internal practice champions for integrative upgrades can emerge from such dialogues.

5. **Virtual, telemedicine or online practice**

- Focus on the type of person you feel called to help. Sell an on-going relationship. Explain to new clients that you will help them on a marathon to rebuild and restore their health.
- Apply for certification training in Predictive Biomarkers available through Health Studies Collegium. Initial certification online including how to use goal values to personalize a program to enhance function by improving epigenetic reserves, resilience and making evidence based individual biochemical needs.
- Option to refer clients to one stop access through 'direct access' testing lab
- Take one client or colleague to breakfast or lunch once a week.

Resources and sources

Information resources:

Science Direct (www.ScienceDirect.com)

Science (www.Sciencemag.org)

Kaiser Health News (emails@kaiserhealthnews.org)

JAMA alerts (www.JAMA.com and www.MorningRounds@ama.custombriefings.com)

NEJM alerts (www.NEJM.org)

Collaborative on Health and the Environment (CHE online listserv)
<http://www.healthandenvironment.org/>

American Botanical Council (www.Herbalgram.org)

American Association of Medical Colleges (AAMC) or AAOMC <https://www.aamc.org/>

American Medical Student Association (AMSA) or ASOA humanistic medicine listserv:
<http://www.amsa.org/members/career/heart-im/>

Health Studies Collegium (www.HSC.org)

Russ Jaffe (www.DrRussellJaffe.com)

National Academy of Medicine (was IOM, IOM.nationalacademies.org)

Proceedings of the National Academy of Science (www.PNAS.org)

Holistic Primary Care (www.HolisticPrimaryCare.net)

Natural Medicine Journal (www.naturalmedicinejournal.com)

Esalen Institute (www.Esalen.org)

Books of Light / Ariel Press (www.lightariel.com)

Saving Our Kids, Healing Our Planet: (www.sokhop.com)

Collaborative on Health and Environment: (www.cheforhealth.org)

Children's Environmental Health Institute: (www.cehi.org)

Environmental Health News: (www.environmentalhealthnews.org)

Our Stolen Future: (www.ourstolenfuture.org)

Pesticide Action Network: (www.panna.org)

Coming Clean: (<http://www.comingcleaninc.org>)

Natural Resources Defense Council: (www.nrdc.org/health)

Beyond Pesticides: (www.beyondpesticides.org)

Greenpeace Chemical Kitchen: (www.greenpeace.org)

Alliance for a Healthy Tomorrow: (www.healthytomorrow.org)

Food First and school lunch gardens: (www.foodfirst.org)

Sources of referrals, products, services and/or information

PERQUE Integrative Health (www.PERQUE.com)

LRA by ELISA/ACT tests (www.ELISA/ACT.com)

What does Russ do (and how does this address his biochemical individuality)

1. **PERQUE** Life Guard™ mini tabsules (sufficient to keep urine sunshine yellow)
2. **PERQUE** Detox IN Guard™ tabsules (1-2 BID based on xenotoxic exposures)
3. **PERQUE** Liva Guard Forté™ softgels (1-2 BID based on xenotoxic experiences)
4. **PERQUE** Mg Plus Guard™, 2 caps & **PERQUE** Choline Citrate™, 1 tsp (1-6 x/day based on 1st AM urine pH, blood pressure and/or transit time)
5. **PERQUE** Mito Guard Plus 100™ softgels (1-6, BID based on muscle endurance or energy level)
6. **PERQUE** Vessel Health Guard™ (2 BID, sufficient to bring plasma HCY to < 6 µmol/l)
7. **PERQUE** Repair Guard™, (4 tabsules 2-6 x/day, sufficient for comfort & hsCRP < 0.5 mg/dl)
8. **PERQUE** Digesta Guard Forté 10™, (4-8 caps 2-4 x/day to keep transit time 12-18 hours)
9. **PERQUE** EPA/DHA Guard™, (4 softgels 2-3 x/day w/ BP <120/80 or Omega 3 Index >8%)
10. **PERQUE** D3 Cell Guard™, (10 drops 2-4 x/day to keep 25 OH-D in the 50-80 ng/ml range)
11. **PERQUE** MDP Plus Guard™ softgels, (2 every other day to improve fat burning in cells)
12. **PERQUE** Prost8 Vitality Guard™, (4 softgels every other day)
13. **PERQUE** Mood Guard™, **PERQUE** Triple EFA Guard™, **PERQUE** Glucose Regulation Guard Forté™, **PERQUE** Adreno Distress Guard™, **PERQUE** Sleep Guard™, **PERQUE** Zinc & Throat Guard™ Lozenges, **PERQUE** Regularity Guard™, and others as needed / PRN
14. **20 min twice a day** of mindfulness practices (Active Meditation by Dr Robert Leichtman)
15. **20 min twice a day** of vigorous physical activity (recumbent bike, swimming, hiking)
16. **20 min twice a day** of thinking creative thoughts often while ambling, dancing or singing
17. **Regular Trager** bodywork sessions
18. **Socialize** with folks having elective affinity at least once a week
19. **Eat and drink** like a peasant; feel like a king or queen
20. **Live** in a place you want to come home to and **do** meaningful work

Why does Russ do the above? Below are results on and off his personal supplement regimen. On supplements means optimized based on the eight predictive biomarker tests whose results follow. Note that he continues to fine tune and improve in regard to the predictive biomarker best outcome goal values.

Measure	<u>Off Supps</u>	<u>On Supps</u>
BP	220/135	105/65
Pulse	72	60
Weight	170	170
% fat	21	18
BMI	24.4	24.4
C Cleanse	18 g	6 g
Transit Time	30 ^o	16 ^o
Hydration	++	++++

Predictive Biomarkers	<u>Off Supps</u>	<u>On Supps</u>
Hgb A1c	5.8	4.9
HsCRP	4.2	1.1
HCY	13.9	6.4
LRA	same	same
1st AM pH	6.2	6.8
Vit D	42	78
Omega 3 Index	8%	>15%
8 Oxo- Guanine	ND	ND

Music Play List

1. **Somewhere Over the Rainbow** by Israel Kamakawiwo'ole
2. **Don't Worry, Be Happy** by Bobby McFerrin
3. **How Can I Keep from Singing** by Enya
4. **Be the Change** by MC Yogi
5. **Turn, Turn, Turn** by Judy Collins
6. **My Father** by Judy Collins
7. **Redemption Song** by Bob Marley
8. **Hallelujah** by Leonard Cohen
9. **Bachianas Brasileiras No 5** (Victoria De Los Angeles) by Heitor Villa-Lobos
10. **Wedding Song** by Noel Paul Stuckey
11. **The Times They Are A-Changin'** by Ritchie Havens
12. **Waters of Babylon** by Sweet Honey in the Rock
13. **Od Avinu Chai** by Shlomo Carlebach
14. **23rd Psalm** by Bobby McFerrin

Aphorisms to Live by... Russ Jaffe *(Except as noted)*

Helpful to synthesize, summarize & enhance results

About Consumption

1. People become the results of what they eat, drink, think and do.
2. Most people are over fed and under nourished.
3. Health means the full team of needed nutrients in required amounts and in the right places.
4. You can't take two B6 to equal a B12.
5. Eat like a peasant; feel like a king.
6. Eat what you can digest, assimilate and eliminate without immune burden.
7. Cells are either in elective protective (renewing) mode or in survival (hanging in until relief comes) mode.
8. Drink ample amounts of water and moderate amounts of all else.
9. For every caffeinated, sugared, artificially sweetened or adult beverage add an extra glass of water.
10. Hypoxic kidneys are a cause of labile resistant hypertension... wash your kidneys, breathe into your abdomen, and strengthen core.
11. Choose life-including diets rich in prebiotics, probiotics, and symbiotics.
12. Physiology before pharmacology.
13. Work-alikes do not work... use only safer, standardized supplements with disclosed bioavailability.
14. Biological machines are self renewing when all needed essentials are provided; purely mechanical machines do wear out whilst bodies are designed to self renew.
15. Cells are alkaline in design; acidic in function... neutralize and buffer acids or die slowly with extra suffering and costs.
16. Aging results from cumulative deficits.
17. At all decades of life, healthy cells cannot be distinguished based on the age of the source.
18. Diabetes kills, diabetes costs, diabetes is a choice.
19. Ills of modern day life are due to errors of omission and commission in regard to what we choose to eat, drink, think and do.
20. Make staples of health promoting, detoxifying foods and make condiments of foods that leave acid or toxic residues behind for the body to clean up.
21. Allow your tea cup to fill then drink deeply.
22. Drink your solids and chew your liquids.
23. Let your food be your medicine and your medicine be your food. *Attributed to Hippocrates, Maimonides, Goethe, Thomas Alva Edison, and Nicola Tesla*
24. Early to bed and to rise makes for joyful prosperity.
25. Live with an elegant frugality of means. *~William Ellery Channing*

About Awareness

26. Live in harmony with your nature... tame your nature to live in better harmony.
27. Fully engaged; absolutely nonattached.
28. Don't worry; be happy. ~*Gautama Buddha and Bobby McFerrin*
29. Stretch to limits, take 3 breaths at limits, find new limits...ahhhh.
30. Exercise muscle groups until they are tired. ~*Sky Jaffe*
31. Use the body's abilities or lose the body's capabilities.
32. Mindfulness training is as important as diet and exercise in sustainable health.
33. No part of you is more than 10 years old... enjoy youthful vitality.
34. Laugh each day... matters not what you laugh at including yourself.
35. Everything in excess is opposed to nature. ~*Hippocrates*
36. If by gaining knowledge we destroy our health, we labour for a thing that will be useless in our hands. ~*John Locke*
37. If man thinks about his physical or moral state he usually discovers that he is ill. ~*Johann Wolfgang von Goethe*
38. Every human being is the author of his own health or disease. ~*Buddha*
39. Just because your doctor has a name for your condition doesn't mean he knows what it is. ~*Bertrand Russell*
40. Inflammation is really cumulative repair deficits.
41. Inflammation is due to lack of some combination of essential nutrients and or excess of anti-nutrients.
42. Breath is a refuge especially in times of external distress.
43. With self-discipline, words can increasingly carry meaning through attachment of will to intention while drawing heartfelt passion to meet the Allostatic and Homeostatic load.
44. Go barefoot early in the spring and stay so late in the fall.
45. Practice what is most important... it usually takes about 10,000 hours to achieve proficiency. An hour a day takes 30 years; 10 hours a day takes 3 years.
46. Too often we only think about that for which we can test.
47. Nature provides both the toxin and the antidote in proximity for those informed and mindful.
48. Pain is not a choice; suffering is a choice.
49. With forgiveness and surrender there is no suffering.
50. The greatest discovery of any generation is that human beings can alter their lives by altering the attitudes of their minds." ~*Rev Dr Albert Schweitzer*
51. [The first wealth is health.](#) ~*Ralph Waldo Emerson*
52. [The slower we get, the more aware we become.](#)
53. [The deeper lives inner peace, the more lives empathy and interdependence.](#)

About Stewardship

54. Nature, nurture, wholeness and interdependence are sustainable.
55. Health and cheerfulness naturally beget each other. *~Joseph Addison*
56. Re-enchantment with everyday life comes from immersing ourselves in nature, the natural, in garden rambles and forest ambles.
57. Leave the place better than you find it.
58. Fear not to sow because of the birds. *~Paul Keene*
59. Nature provides medicine and poison, the antidote and the wisdom, for those relaxed and aware.
60. Spirit without science is blind; science without spirit is dumb. *~Albert Einstein*
61. Better health, better care, lower costs through the *Joy in Living the Alkaline Way*. *~paraphrasing Don Berwick's Triple Aim*
62. Be the change you aspire to be. *~MC Yogi*
63. Elders serve as conduits between the divine realm and the mundane world, making the abstract truths of spirituality accessible to the community by embodying them in their everyday behavior. *~Reb Zalman Schacter-Shalomi*
64. Stand witness and accept the results.
65. Be your own doctor while healthy; cultivate a wise healer within and without when in need; accept with humility and gratitude the needed healing and the healing needed.
66. We make the bed of our life over decades and then often regret lying upon it for decades more.
67. Health is priceless; illness is too expensive.
68. Practice more; preach less.
69. Preaching is easier than practicing.
70. Speak less; add coherence to your thoughts and let your word be your bond.
71. Do the right thing. It will gratify some and astonish the rest. *~Mark Twain / Samuel Clemens*
72. Cradle to cradle solutions. *~Anna Sylvan Jaffe*
73. Speed the transition from sick care to healthful caring.
74. Descriptive pathology is downstream about symptom suppression and earlier disease management.
75. Functional physiology is upstream about causes and primary prevention.
76. Absence of evidence is not evidence of absence. *~Carl Sagan*
77. **If I am not for myself, who will be for me?**
If I am only for myself, what am I?
If not now, when? *~Hillel the elder*

About Planetary Context

78. Earth functions as a single cell organism, of which we are an indispensable member.
79. The least available needed component controls the efficiency and productivity of any complex system (like a cell in regard to nutrients it needs yet cannot make and therefore must take in from the outside). *~modified from von Leibig*
80. Microbiome and metabolome: Digestion and metabolism more elegantly rediscovered
81. 92% of lifetime health is epigenetic habit choice.
82. DNA is a blueprint from which we adapt and which we modify within and across lifetimes.
83. Sunlight provides most of the healing on the planet and all that is needed. *~paraphrasing Ven Bhanṭé Dharmawara*
84. Evidence based biochemical individuality is finally available through use of Predictive Biomarkers tests with goal values as basis for life-style management.
85. Predictive Biomarkers determine all causes of morbidity and mortality 10 years ahead yet respond to changes in habits of daily living within weeks to months.
86. An error however often repeated remains incorrect.
87. Time is the most precious gift of all.
88. What you find distasteful do not to any. *~Hillel*
89. No mother's child should die early; no parent should bury a child.
90. Kindness and compassion have become my religion. *~HH XIVth Dalai Lama*
91. It takes three generations to raise a healthier person.
92. Laws of cause and effect apply in relationships.
93. A result of mindfulness practice is the discovery that everyone is mother, father, sister, brother, daughter, son.
94. Fully appreciated, it is all right including the worst of it.
95. Afflictive feelings and ills result from fear, anger, and the illusion of aloneness and early experience that life is not friendly.
96. Choose your parents carefully.
97. Meaningful work.
98. Think globally; act locally. *~René Dubos*
99. microRNAs and DNA exchange (gene intra and extra jumping, reverse transcriptase, RNAs passed from generation to generation epigenetically) put paid to the Central Gospel of DNA to RNA to protein.

For those interested in the bigger picture or the policy perspective, the following is a Health Studies Collegium working document.

Lives and treasure at stake: Sick care or Health care... it is a choice

Your birth date is fixed. Functional age is your choice.

Most of your cells are barely a few weeks old. The rest of you is at most ten years old. Chronology, birth age, is less important than biology, functional age.

Decades of quality life at low costs can be added for most people when the predictive biomarker tests and assessments discussed below are applied. As both a consumer and a test developer, my plan is to continue reporting outcome results over the next decades. Information here provides a guide for those seeking personal health promotion now and risk reduction for a lifetime.

Personal background

Over half century as a clinician, basic scientist, and curious character has left me cross-trained in multiple healing arts. Often starting as skeptic, it was my privilege to start as acolyte and then become physician to the 'master.' While atypical, this provided a most interesting post-post graduate life education.

After training in Internal Medicine and Biochemistry at Boston University Medical Center, I matriculated to the National Institutes of Health (NIH) Public Health Service (PHS) where board certification in Clinical Pathology and subspecialty boards in Chemical Pathology followed. Molecular biology and scientific method along with mindfulness and practices of engaged non-attachment are integral to my orientation as a professional.

My cross trainings include molecular biology and metrology (the science of making measurements) at the NIH Clinical Center. Dr. Ramamurti Mishra, author of *The Textbook of Yoga Psychology*, guided me in Adyar-vedic traditions of India. Jing Ng Wu trained me in traditional Chinese Medicine and Phillip Cassadore mentored me in Apache Native American traditions. Samdech Preah Bhante Dharmawara guided me in mindfulness and Buddhist medicine. In these areas my training is by traditional mentorship. In other therapies my training is much more casual and eclectic. Examples where opportunity and curiosity presented themselves include Joan Kellogg's Mandala color therapy, Helen Boney's music therapy, Beatrice Trum Hunter's functional nutrition, Bob Monroe's pulsed fields as well as Moshe Feldenkrais's and Milton Trager's manipulative arts.

Starting from curiosity, skepticism and lack of experience my willingness to immerse in experience and practice led to insights for which I am grateful. Distinct philosophies of care became accessible. Each has strengths; none has all the answers.

Projects presented themselves. Finding effective ways to remove heptachlor from Oahu was one. Another was the first directory of indoor environmental quality experts and Clean Your Room, a report issued by the Department of Consumer Affairs in California under Richard Spohn.

‘ReThink Health’ integrates evidence-based personalized primary prevention

A synthesis of much of what has been distilled from my decades of skeptical inquiry is included in *Joy in Living the Alkaline Way*. An online link to download is http://perque.com/rethink_health/. The guide provides primary health promoting information and practical suggestions. The Alkaline Way enables those who want to live according to their needs and individual natures while using their habits of daily living to promote sustainable, documented well-being.

We become the product of what we eat, drink, think and do. Conditioning and external influences are ever present. Internal responses to external stresses depend upon learned resilience and perseverance with coping skills when needed until the distress is past or resolved.

Suggestions below confirm that changes in habits evoke substantial changes in how healthy and well we feel and function; how at risk we are of ill health. Personal health assessments and predictive biomarker tests provide guidance about both how we are functioning today and also the likelihood we will continue to renew and function well tomorrow. When properly understood and interpreted, such information can guide us personally to fuller health expression.

My group has also developed a variety of novel, some widely used, laboratory tests. In common, these tests improve outcomes by being more accurate and predictive. Presented below is my best synthesis and personal sequence of what actions for people, **providers**, **payors** and all those seeking sustainable, affordable, effective solutions to today’s major life stealing chronic illnesses.

Medical care today: Wars on disease; Global Comparisons

Medical care today is primarily based on ‘sick care’; it is externally focused. Such an ontologic view of health presumes disease to be caused by external agents. Therapies that

combat diseases are the logical result. Professionals focus on making the correct descriptive diagnosis of disability or pathology. Treatment focuses on symptoms. This means waiting until dis-ease emerges before addressing a health problem. This also means ignoring primary prevention and individual needs, leaving people hospitable to adverse events or accelerated dysfunction largely due to unmet essential requirements. Now, with predictive biomarkers and personal assessments as described below, personal requirements can be identified. Primary care begins with habits of daily living and incentives for virtuous cycles or behaviors. Small, consistent steps appreciated and celebrated lead to major risks reduced and quality of life promoted. In most cases, just a few months is sufficient to document changes. It is usually possible to reverse or undo decades of slow atrophy or functional decline.

Diseases are seen as externally caused and the body as an elegant machine that wears out and needs to be patched up. Wars on diseases that too often yield marginal results and fragmented sick care are 'best standard of care.'

Unforeseen consequences of current healthcare can be summarized in my grandmother's aphorism... 'The rents are going up and the ceilings are coming down.' In regard to America's national healthcare system, the costs continue to escalate while the value of health promoted and risks reduced continues to fall. Any industry with such a poor return on investment is ripe for rethinking and creative reinvention.

By comparison, America ranks 15th to 45th on all health markers when compared to 153 countries. America ranks first globally in amount of money spent and in the proportion of national wealth devoted to healthcare/sick care. 'American exceptionalism' is often presented as if we cannot be compared to any other country. As one of my mentors, John Knowles, said when president of the Rockefeller Foundation, "America is spending ever more while feeling ever worse and we call that a model for the world's healthcare." America as a member of the global community has led in healthcare technology and in wars on illness. Now is the time to transition to leadership in evidence-based health promotion and primary prevention.

Further, the widespread notion that wars on diseases can deliver good health at affordable costs deserves re-analysis. In light of how little has been delivered from wars on cancer, heart disease, diabetes and other chronic, autoimmune conditions in the last half century, it is a 'bad bet' to do again what has delivered little before. While disease rates have changed, it is hard to find evidence that modern medical care is responsible for the improvement despite the trillions now being expended annually. Changes in diet, activity, attitude and environment account for essentially all changes in health outcomes including lifespan.

Individual variances in responses to medications mean some populations are more at risk than others of developing major complications or adverse effects, especially those with one or more essential nutrient deficit. While some of this (~8%) is genetic, the majority (~92%) is epigenetic; life-style based.

Historical context: Emergence of American Academic Medicine

During the 19th century a wide variety of healing arts were taught through mentored apprenticeships. The majority of practicing physicians in 1900 were eclectic. This meant they used medications, natural products, psychology and whatever their experience taught as helpful for each individual in their care.

Abraham Flexner, with JD Rockefeller and Andrew Carnegie as patrons, authored a landmark report calling out the defects of apprenticeship and the need for scientifically based, standardized medical education. Within a decade the rise of academic medical schools began to advocate for legislation affirming Allopathic medicine as the preferred, more legitimate healing art. As payor systems emerged they followed the 'hospitality model' viewing volume of services and procedures delivered as the measure of healthcare system success. The Blue Cross/Blue Shield payor model was set up by surgeons to pay for volume of procedures more than experience and regardless of outcomes. 'More' rather than 'better' has become the metric and measure of success to too many healthcare professionals, systems and payors.

The premise and goal of the Flexner era was to bring a more scientific, better documented healthcare system to America largely based on what came to be known as 'magic bullet' medicine and medications. The additional consequence was to anoint magic bullet therapies as more scientific and to depreciate traditional remedies.

Paul Ehrlich was a brilliant scientist who worked in the early 20th century. He coined the term and concept 'magic bullets' to describe targeted chemicals that would seek out and destroy abnormal or infected tissues. An assumption, now disproven, is that disease causes are external; are ontologic. In fact, host hospitality to disease only emerges when there is a *lack* of something essential that people cannot make in the body or an *excess* exposure to something noxious to that person. Essential nutrients must be taken in from the outside in proportion to how fast those required factors are being used up inside each individual.

Treatment in America for the last century has been progressively confined and legally constrained to conform standards of care and payment to symptom based treatments.

Nature, Nurture, Wholeness and Biochemical Individuality

Removing obstacles to recovery and evoking healing responses is no longer part of the training of health professionals whose education focuses on symptom-based care.

Nature, nurture, kindness and compassion provide many first-line healing options. Integrative Medicine embraces these and is proving more cost and outcome effective as well as preferred by consumers. This means patient centered, evidence based comprehensive, holistic and predictive medicine.

Natural products, such as herbs, vitamins, and essential cofactors, are misunderstood by Allopathic 'ontologists' as if they are drugs, having risk to benefit relationship similar to pharmaceuticals. With prescription medications, the effective and toxic doses are usually close to each other. Natural products usually have wide margins between benefits and toxicities. Now that safer, standardized natural products are available, the toxicity is low even when individuals require higher levels to achieve desired health outcomes, symptom regression, or retest improvement. Better regulation is needed to enforce quality standards across foods, food additives, and dietary supplements ('foods for special dietary use').

Another professional initiative includes higher quality standards for safer, more effective supplements. The products that emerge are novel with better uptake and more consistent clinical reports of exceptional benefit. Only natural ingredients are used, the forms shown beneficial in the original scientific studies. Work-a-likes are always excluded because too often the work-a-likes do not work, especially at higher, more beneficial levels. Much of the paradoxical and confusing results about higher dose supplements clarifies when you distinguish the single synthetic work-a-like form from the mixed natural standardized form.

Examples follow of the natural, safer form of nutrients with vanishingly small risk of harm in contrast to the work-a-like that at least in hindsight is clearly less safe and potentially harmful.

Natural vitamin E contains eight forms. The gamma tocopherol is heart healthy. The alpha form is not heart healthy. Studies correctly confirmed that large amounts of d-alpha-tocopherol acetate or succinate dilute the heart healthy gamma tocopherol and thus increase risk. In contrast, increasing gamma tocopherol as part of sufficient vitamin E and selenomethionine to prevent membrane free radical damage has been known for decades to be helpful, especially when combined with other cardiovascular risk reduction approaches as noted below.

Folate provides another example. There are eight forms in nature and natural folate is available. Synthetic folic acid is a work-a-like that is less helpful and has a higher risk than nature's folate.

Polyphenolics provide yet another aspect of the issue. These are the molecules that make plants colorful. These are also able to enhance and protect immune and neurohormonal cells when they are under stress. While there are thousands of flavonoids, quercetin dihydrate continues to excel by reports from the clinic as well as from the laboratory bench. Flavanols work synergistically with flavonoids. We suggest soluble, low molecular weight orthoproanthocyanidins (soluble OPC) as the preferred flavanol.

In regard to vitamin C (ascorbate) there is another dilemma. Most of the vitamin C that is sold is synthetic. This means half is taken up (the l-form) and half stays in the intestines where sometimes it becomes irritating (the d-form). Further, the bulk production is done in air where oxygen can damage some of the vitamin C during production. Indeed, while ascorbate is the helpful form of vitamin C, much of what is sold in general commerce is a mix of partially and completely oxidized ascorbate. Dehydroascorbate can be reduced back to ascorbate. Diketogulonate cannot be restored and the body wants to get rid of it in the urine, sweat and stool. So the bargain work-a-like vitamin C turns out to be very expensive in regard to any active, helpful antioxidant contained within.

Quality of life and health status mostly derive from habits of daily living.

What we eat and drink, think and do are choices. A well-adapted, personal balance of what we choose to consume and how we adapt to life events determines more of our lifetime health than even the best medical care. For those who like numbers, 92% of lifetime health is choice (epigenetic) while the remaining 8% is from our parents (genetic).

Applying nature and nurture to meet individual needs is more effective in my experience. Predictive biomarker tests can guide what next small step toward better health to take. We recommend that as health challenges arise they are addressed early and at their cause while reserving trauma triage and disease treatment for palliative care. Indeed, a curious literature exists that when physicians in general or cardiologists in particular are either at academic conferences or on strike, the death rate goes down. Despite best efforts, have the aggregate effects of high tech healthcare become more costly than helpful?

As Uwe Rheinhardt, the Princeton University health economist projects, current trends make it likely that in just the next generation everyone will be in a hospital bed taking care of those around them. We all deserve better. Now is the time to change course so that a renaissance of health, prosperity and civil society can emerge. This means creative disruption at an unprecedented level given the size and impact of the sickness care industry.

Explore with me the most important health promoting and health depleting habits. This is known technically as the Allostatic and Homeostatic load... the total external as well as adaptive internal life load or costs as expressed in the quality of our mental, physical, and spiritual health. Know your options in response to life's daily challenges.

The Health Studies Collegium Working Group on Health calculates current net excess cost of sickness care. An annual 1,000,000 early, expensive deaths that cost the nation's balance sheet \$8 trillion dollars are the computed national, annual excess costs of the current system.

Sick care starts treatment later when problems have often been simmering below the diagnostic threshold for a long time and assume that treatments producing an absence of symptoms are the best healthcare can deliver. In this sense, medical care deals only with ill health and does not actively, effectively promote good health. Health habits of daily living are praised. When practices and incentives reward health promotion, lives and fortunes are saved.

Today we have the opportunity to lead in renewing our soil, air, water and urban areas to promote sustainable good health. Natural products can now be both quality assured and patented when unexpected benefits are found. A new generation of medications and science may yet find nature a prolific source of healing remedies that are less toxic and, when properly combined and standardized, offer hope for a new generation of even more effective remedies personalized through biometric devices as explained here.

We have had a century's fascination with isolated active ingredient based medications. Natural products, properly standardized, provide enhanced benefits with fewer adverse events. An example is quinine. Quinine comes from Cinchona bark. Both quinine and Cinchona bark protect from Malaria. Over time, quinine causes liver scarring; Cinchona bark has protective polyphenolics and other antioxidants that prevent liver damage. There are many similar examples where nature provides the source, chemists isolate and synthesize the active compound only to find that the family of components in the natural product provide greater safety and long-term effectiveness with fewer adverse events. Gin and tonic, for example, was invented to get British and Indians to drink their malaria protecting bitter tasting Cinchona bark tincture.

With the help of access to information from the Internet and wearable biometric devices just now becoming widely available we can speed a transition to personalized primary prevention that embraces global knowledge in the service of each individual. As individuals we can feel and function better when essential, required nutritional and nurturing needs are met.

Now is the time to invest in your health. The alternative is proving too costly and too lacking in compassion to continue much longer. We can each now ReThink Health based on practices that use experience and smarter systems to address each individual's care needs earlier, allowing primary prevention approach that work at lower risk and cost.

Together we can 'ReThink Health' locally, personally. Experiences in personal health exploration routinely reconnect people with those for whom they care, with nature and with life's interdependence. This includes at the most profound, quantum physics level.

We can be stewards for future generations rather than consumers with little regard for the wastes and suffering built into the products and services that increasingly compete for our attention. My choices are constantly influenced by the images and sounds around me. My choice is to be with those who choose life and health moment by moment. Composing our lives so that kindness and compassion are woven into practices that infuse and inform each breath (prana; chi; tse), each thought (meme, samskam), each translation of intention into action.

To paraphrase a classic spiritual metaphor, many people sacrifice their health to gain wealth. Then they give up their wealth seeking to restore health. People often remember the past and imagine the future in ways that distract them from living in the moment. As a result, they pass on having never really lived. Enhanced awareness allows us to choose more wisely. Active Meditation and similar mindfulness practices enhance capacities to experience and be grateful for the interdependence of all life.

This approach is described and illustrated below. We can appreciate situations around us that conditioned us in the past as guides going forward both in regard what to do and what *not* to do. When living each moment fully becomes a habit we learn to stay at peace even when external events are stressful or hostile. We can learn to be fully engaged in meaningful work yet non-attached to what happens. The past is behind us. The future has not happened. We have this moment. We live in a time of unusual opportunity and of danger. Good fortune, indeed, if we make better personal choices. Further, marketing brilliance on behalf of biopharma companies has reinforced the notion to consumers, policy experts and regulators that we can do no better than what we have been doing with wars on diseases and symptom-based reactive therapies, albeit with continuous marginal improvements on the horizon.

For the last several decades America has been one of just two nations globally that allow direct to consumer advertising. It seemed like a health promoting benefit to remove tobacco advertising from television and magazines, replacing it with pharmaceuticals advertising. Over just a few decades, the share of the healthcare dollar that biopharmaceuticals occupy has grown from nine to more than eighteen percent of a much larger healthcare dollar. This

increase in 'share' provides substantial additional dollars to increasingly shape policy, research priorities as well as consumer perceptions. The results include a shift toward more and more symptom-based treatments that encourage patients to request specific therapies from their physicians.

Several studies of patient physician behavior suggest that if a patient requests a specific therapy they are four times more likely to receive it on request than if they actually need that therapy. Physicians, when interviewed, report explanations for why they offered the prescription when not indicated, mostly along the lines of wanting to be compliant with their patient and assuming that harm will not occur. Today we each have the choice to go by results. We can become progressively healthier and more aware by choosing more wisely and actively *or* we can choose to have a licensed health professional triage our ills and treat our symptoms. Intrigued? You are welcome to test this approach and go by your own results.

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