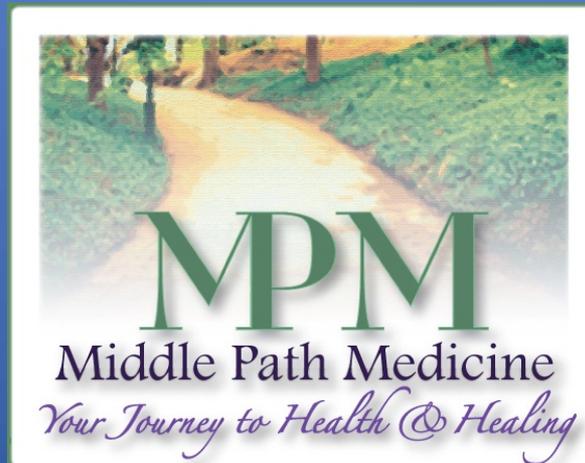


CardioMetabolic Wellness

Gary E. Foresman, MD

January 2019



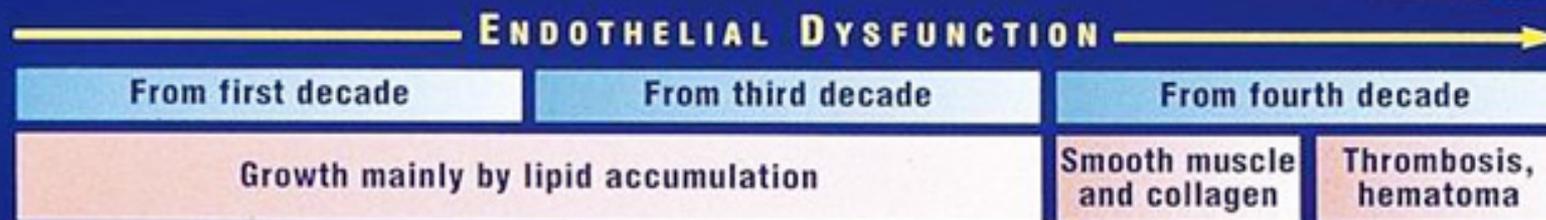
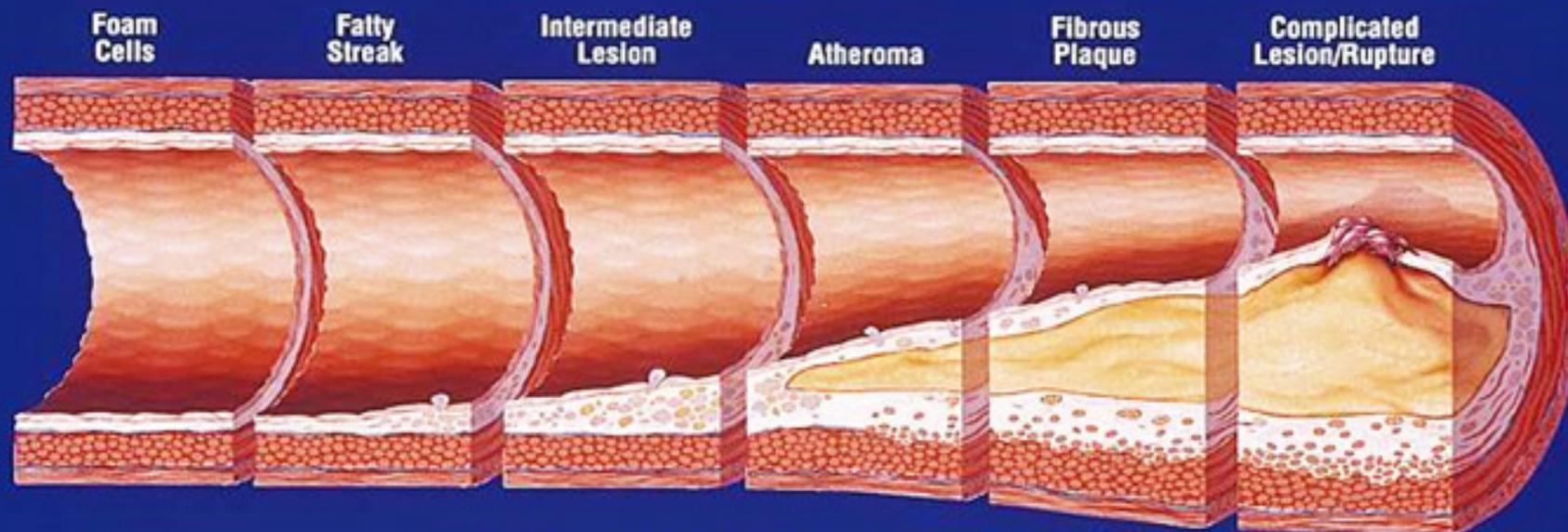
What Is Middle Path Medicine?

- **Gary E. Foresman, M.D.** : Board Certified Internal Medicine Physician, Board Certified Functional, Anti-Aging & Regenerative Medicine, Fellow Integrative Cancer Therapies, Founder and President of Middle Path Medicine
- **Jessica Joslyn, PA-C**: A graduate of Stanford University School of Medicine, Jessica is a Certified Physician Assistant, able to provide primary care, family medicine, as well as homeopathy.
- **Intravenous Nutrition Therapy : Crystal Silvera RN**, powerful form of therapy for healing, recovery, and rejuvenation.
- **MPM Supplement Shop** : carries only the highest quality vitamins and supplements. Each product is specifically selected and approved by Dr. Foresman.
- Our website **www.MiddlePathMedicine.com** holds a vast wealth of knowledge, free to anyone who wants to better his or her own wellness.

CardioMetabolic Wellness

- **Atherosclerotic Cardiovascular Disease (ASCVD)** primarily presents as the complications of Atherosclerosis whether Coronary Artery Disease (**CAD**) : angina and “heart attack” known medically as myocardial infarction (**MI**) Cerebrovascular Disease: “stroke” or cerebrovascular accident (**CVA**) , or Peripheral Arterial Disease (**PAD**) : claudication.
- **Atherosclerosis** represents the gradual aging of our vascular system, a complex inflammatory, oxidative, autoimmune, constellation of damage to the lining of the blood vessel known as the endothelium.

Atherosclerosis Timeline



Adapted from Stary HC et al. *Circulation*. 1995;92:1355-1374.

CardioMetabolic Wellness

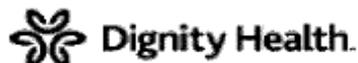
- In fact, ED has always traditionally stood for Endothelial Dysfunction, not the one guys really care about, Erectile Dysfunction!
- Erectile Dysfunction actually should start a conversation with a man and his physician about screening for CAD, as ED warns of an impending CV event usually within 3-5 years of onset of symptoms!

Screening for CAD

- The **Coronary Artery Calcium (CAC)** Score, a test I have recommended for over thirty years, has finally gained acceptance, even among cardiologists!
- The single most important screening test for every human being, it involves a CT scan that take about 30 seconds, no dye involved, and currently costs \$134 at San Luis Diagnostic Center, and is worth every penny.

Screening for CAD

- Who should get the test?
- All men over 45 y/o
- All women over 55 y/o
- For those with strong Family Histories of CV events, begin screening 20 years prior to the age of the parent's event. For example, a woman whose mother died of MI at age 56 should begin screening at age 36. Earlier testing also in those with atypical symptoms or significant risk factors.



Imaging Services
DIGNITY HEALTH-FRENCH HOSPITAL
SAN LUIS DIAGNOSTIC CENTER
1100 MONTEREY STREET, SUITE 210
Facility Phone #: 805-542-9700

Name: **FOESMAN, GARY** DOB: 12/1/1962 Age: 56 years Sex: M
MRN: 3100263634(FHM); 3100263634(AGC) Pt loc: FHM SLDC
Billing #: 78004750911 PCP: PCP,No
Copy To: Foresman,Gary E MD

Computerized Tomography

PROCEDURE	ACCESSION	EXAM DATE/TIME	STATUS	ORDERING PROVIDER
CT Cardiac Ca Scoring wo Con	36-CT-19-018413	1/21/2019 11:53 PST	Auth (Verified)	Foresman,Gary E MD

Reason For Exam

(CT Cardiac Ca Scoring wo Con) screening misc

Report

CI: screening for cardiovascular disease

REFERENCE STUDIES: None.

PROCEDURE: Using EKG monitoring, breath hold images through the heart are obtained. Calcium quantification is performed on the 3-D work station and compared with age-related normals. 0.625 mm axial volume acquisitions obtained on a GE Light Speed. Data transferred to independent work station for 3-D reconstructive analysis. CTDIvol/DLP: 17.06/307.03.

FINDINGS:

CALCIUM SCORE: 0.

PERCENTILE RANK FOR AGE AND SEX: 10th percentile.

VISUALIZED LUNGS: Normal.

MEDIASTINUM: Normal.

UPPER ABDOMEN: Normal.

OTHER FINDINGS: None significant.

COMMENTS: N/A.

IMPRESSION:

Calcium score: 0.

Percentile rank for age and sex: 10th percentile.

COMMENTS: N/A.

Note: This report may contain errors in syntax, word selection, grammar and/or spelling related to the use of speech recognition software.

Electronically signed at San Luis Diagnostic Center by Kristen Kieley, M.D. on 1/21/2019 1:35 PM

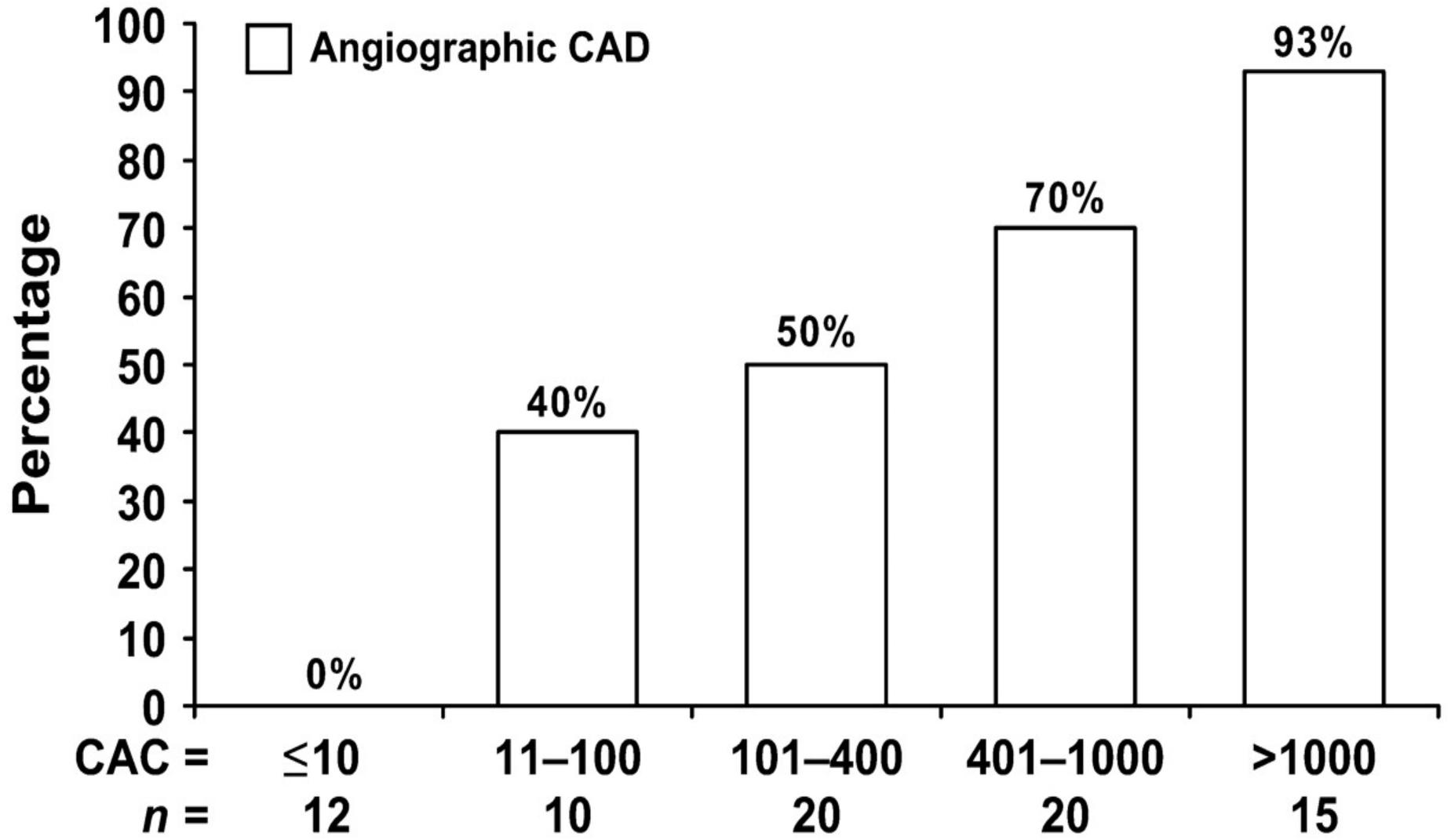
FINAL

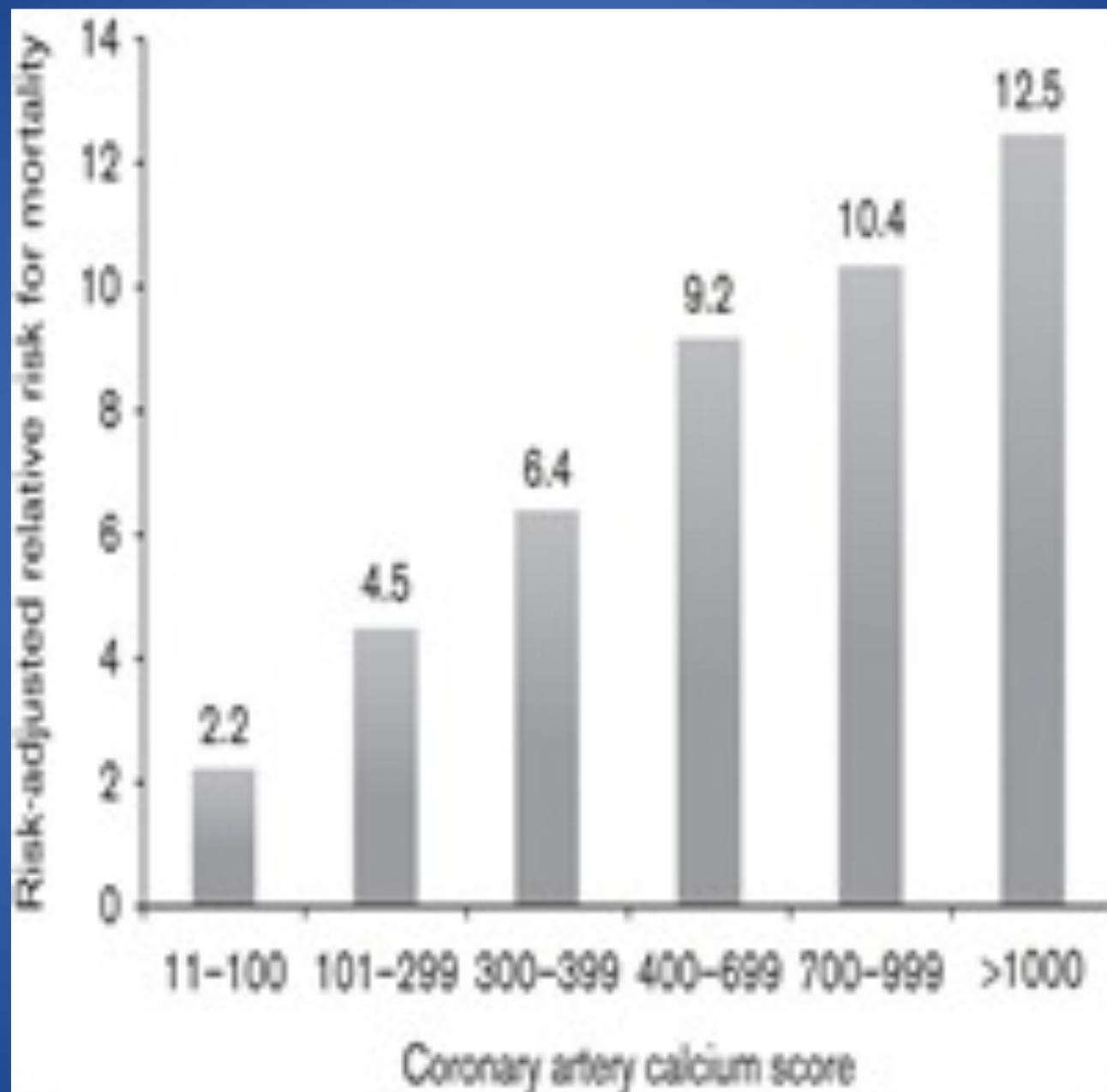
Dictated by: Kieley, Kristen W MD, Physician

Electronically signed by: Kieley, Kristen W MD

Transcribed by:PU, D: 01/21/2019 13:33, T: 01/21/2019 13:33, S: 01/21/2019 13:35

FINAL





CAC: Always the best test, across all the studies....

Study	Screening Power of CAC Scoring
2005 St Francis Heart	Predicted ~10x Risk with CAC > 100 Vs CAC < 100 (after RF adjustment, and CRP failed)
2008 MESA	Predicted ~8x Risk with CAC > 100 Vs CAC < 100 (after RF adjustment)
2003 Kondos et Al	Predicted ~7x Risk with CAC > 170 Vs CAC < 170 (after RF adjustment)
2005 Taylor et al	Predicted ~12x Risk with CAC > 0 Vs CAC < 0 (after RF adjustment, and CRP failed)
2005 Yeboah et al	CAC beat all predictors as always (CIMT, brachial flow dilation etc. failed again).
2008/2010/2012 Pencina/Polonsky et al	CAC re-classified ~60% of Middle-Risk people: 20% became High-Risk , 39% became Low-Risk !!! (CAC blew away CIMT and other predictors by a full order of magnitude)
Multiple Studies	CAC = 0 predicts event rate less than 1%. High CAC predicts event rates >30%.
Budoff et al 2009	CAC = 1 to 10 showed 20x more first-year events vs. CAC = 0 (note factor changes over time...!)
Raggi/Greenland et al 2000/2010	CAC > 400 had 4.8% cardiac events per year, versus 0.1% for CAC = 0. Greenland et al verified CAC = 0 had 0.1% events over 3-5 years , independent of Risk Factors...

100's of thousands of people tracked in these and other CAC studies. Always the same result. It *SEES* the disease process

Screening for CAD

- If a man or woman gets 2 screening CACs at least 10 years apart of 0, that ends the screening process, unless they want to!
- Any score other than 0 requires a conversation with an educated health care provider.
- I recommend aggressive risk factor reduction and retesting in three years especially for those with scores over 11.

CardioMetabolic Wellness

- “A Man is as Old as His Arteries” : Thomas Sydenham MD (1624-1689)
- “The good physician treats the disease; the great physician treats the patient who has the disease.” Sir William Osler (1849-1919). One of the founders of Johns Hopkins, and recognized as “The Father of Modern Medicine”
- How different modern medicine has become.

Standard Risk Factors

- Ahhh... **Dyslipidemia**, my favorite.
- PMID 27292972 From the British Medical Journal May 2016- “The Inverse Association of LDL Cholesterol and Mortality in those over 60!
- This meta analysis of 19 cohorts involving over 68,000 people over the age of 60 documents that in 16 of the 19 cohorts a profound inverse association with LDL cholesterol and overall mortality
- In fact the highest LDL groups had approximately a 50% reduction in all-cause mortality! With most studies lasting 10 years.

Standard Risk Factors

- The Cholesterol Hypothesis of Atherosclerosis has always been wrong and entirely devised to sell drugs.
- Higher LDL binds to and inactivates a broad range of microorganisms and their toxic products explaining a dramatic reduction in mortality from respiratory and GI infections in those with higher LDL.
- Higher LDL has long been associated with lower overall cancer risk possibly decreasing viral related cancers.

Confused Yet?!

- “It is a miracle that curiosity survives a formal education.” “The most beautiful thing we can experience is the mysterious. It is the source of all true art and science.” Albert Einstein (1879-1955)
- The reason the cholesterol mythology has hung on so long is because billions have been made creating a profitable illusion, just like with climate change denial.
- Furthermore, with familial hyperlipidemias, cholesterol does play a role, and statin drugs do have mortality benefits in those with CAD, not, however, because they lower LDL, most likely due to anti-inflammatory effects. PMID 30669380

Standard Risk Factors

- I still measure cholesterol profiles in everyone as I find so much value in fasting lipids, breaking down the Triglycerides, HDLs, LDL and finding through extensive endocrine and other evaluations as to where the biochemical fingerprint of that individual lies. Treating the person and not treating dyslipidemia blindly with drugs or supplements.

Treatment of CAD

- For anyone with a CAC greater than 0, you must consider treatment:
- **Red Yeast Rice (RYR) Extract** 600mg 2 caps 2x/D (or a “statin” drug)
- **Kyolic Reserve** 1 cap 2x/D (Aged Garlic Extract - AGE)
- **OrthOmega** 2caps 1x/D (EPA/DHA), or Cod Liver Oil!
- **KForce** 1-2 caps 1x/D (K2-MK7+D3)
- Of course, aggressively treat all other risk factors.

Treatment of CAD

- For **primary prevention**, no clinical CAD, just a positive CAC, I use the traditional herbal remedy RYR as it contains dozens of constituents that modify the toxicity and expand the efficacy of the statin component.
- For emphasis we use RYR to treat CAD, Not to treat high cholesterol, treating high cholesterol (in any other way other than RYR or statins) in a patient without CAD increases overall mortality!!!!

Treatment of CAD

- On “statins”, the class of medicines that inhibit the most important enzyme in the human body, HMG-CoA Reductase.
- This enzyme is the rate limiting step in the mevalonate pathway involved in cholesterol synthesis and the processing of nearly every protein in the body!
- This has always been my concern with these drugs and the general “poisoning yourself to long-term health strategy” should not ring true to anyone.

Treatment of CAD

- That being said, it is impossible not to look at statin research data and not be impressed!
- The implication of its anti-inflammatory effects now make the statin drugs of potential utility in any inflammatory condition!
- The only drugs to lower cholesterol and improve mortality do not work because they lower cholesterol!!
- The most proven statins: rosuvastatin and atorvastatin (formerly known as Crestor and Lipitor) have the most proven mortality benefits and must be considered in secondary prevention of CAD and other inflammatory conditions.

Treatment of CAD

- Higher dose statins work better than lower dose statins, atorvastatin 80mg or rosuvastatin 20mg.
- Keep the LDL above 50 as we hit the limit of tolerance required by the human body for LDL to do its job.
- Monitor inflammation markers such as LpPLA2 and MPO, keep CoQ10 levels greater than 1.5.
- If lifestyle and supplements do not correct inflammation, consider statins!

CardioMetabolic Wellness

- As we move from cardiovascular disease to cardiometabolic wellness, I will switch to “Mechanisms of Aging” or “Mechanisms of Disease” as the two are exquisitely similar.
- A gentle reminder that reference ranges for labs focus on disease whereas the reference ranges for optimal wellness can be dramatically different!
- The level of Vitamin D to prevent rickets is dramatically lower than the level for optimal immune function!

The Four Horsemen...

Of the Apocalypse of Aging!

Glycation and Insulin Resistance –

- **HgbA1C%**: Optimal ≤ 5.2 , Diabetes >6.0
- **Fasting Insulin** <5 microU/ml
- Over time the literature on Advanced Glycation Endproducts (AGE) has made these markers the primary predictor of disease yet found.

The Four Horsemen...

Inflammation

- There are dozens of markers we could use, the primary ones we use include:
- **hsCRP:** <1.0 mg/L
- **Fibrinogen:** 250-350 mg/dL
- Nearly every medical conference focuses on dysregulated inflammatory responses as the key initiators and propagators of disease. (Not cholesterol!)

The Four Horsemen...

Oxidative Stress

- **Oxidized LDL:** <40 IU/L
- As one reviews the free radical theory of aging, clearly the Advanced Lipoxidation Endproducts (ALE) and although many candidates to test for exist, I find oxidized LDL and antibodies to oxidized LDL(not yet available) as clear markers of oxidative stress whether environmentally from smoking, pollution, or trans-fats or endogenously produced primarily due to adrenaline (epinephrine) and cortisol (stress responses)

The Four Horsemen...

Last but not least:

Methylation

- **Homocysteine:** <8.0 micromole/L
- This goes way beyond the dreaded MTHFR genes and points to one of our most basic detoxification mechanisms to DNA repair and beyond. Primarily related to the B vitamins B6, B9-folic acid, and B12, however it is much more complicated than that.

Other Biomarkers

- **Lp(a)** a significant hypercoagulability and “stroke”- CVA risk factor
- **Apo E**: genetic risk for Alzheimer’s and Parkinson’s
- **25-(OH)D₃** (70-90mg/dL) our most important steroid hormone that we never get enough through sun exposure... never
- **HS-Omega-3 Index** (RBC EPA+DHA%) usual goal of 10-12%, which we rarely get through diet
- **CoQ10**: > 1.5 mg/dl An important mitochondrial nutrient which we are witnessing an epidemic depletion most likely related to our toxic environmental soup.
- **True Health Diagnostics Panel**: the current lab I chose for in-depth lab analysis, completely covered by insurance. “Measure every thing you can!”

Standard Risk Factors

- **Smoking:** Each and every day more people in the world take up smoking.
- **Hypertension:** the importance of both hypo and hypertension can't be emphasized enough. The average of evening BPs taken at home sitting for 10 minutes using an arm cuff should be the only numbers a physician uses to adjust meds. As we age we must adjust goals of therapy upward. General guidelines: SBP 125-145, DBP 70-80.

Non-Traditional Risk Factors

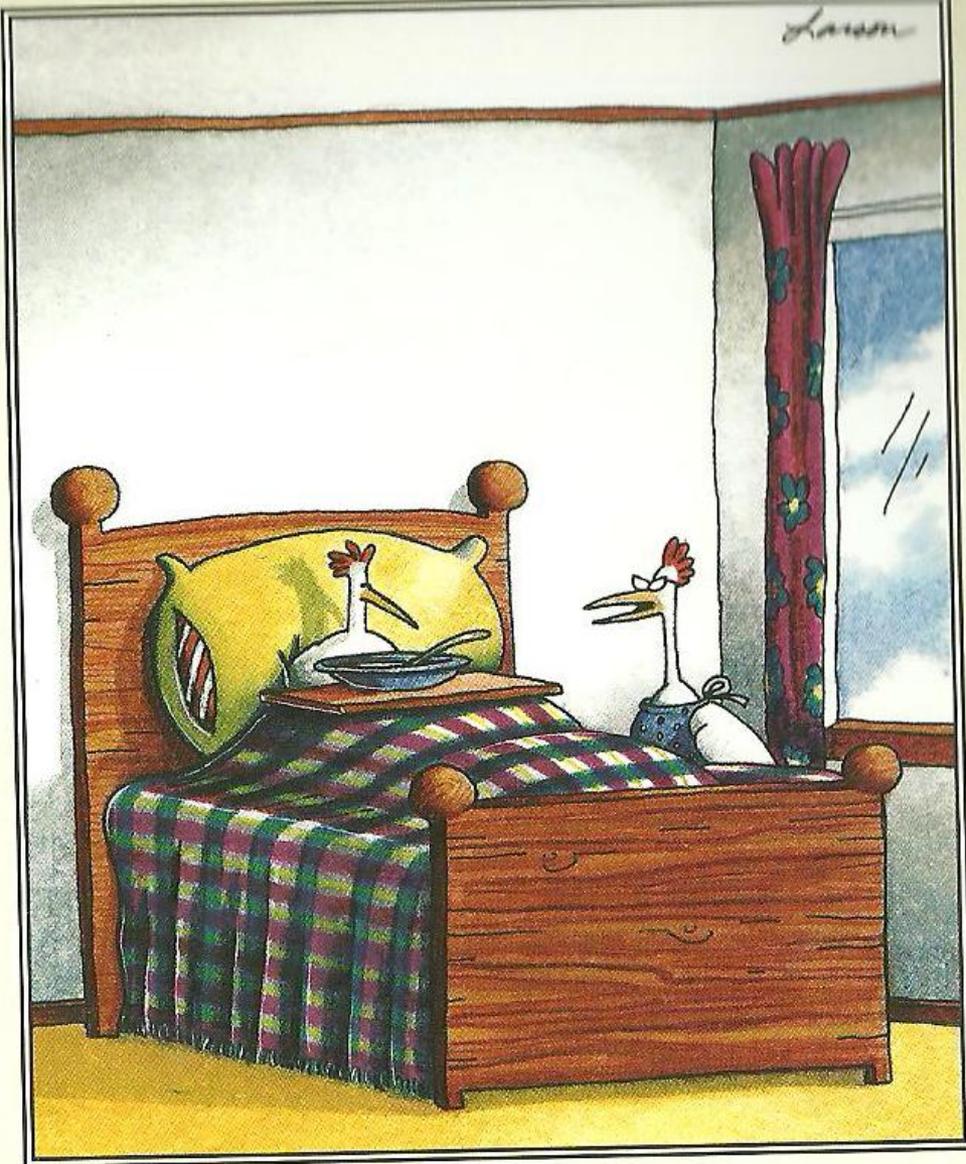
- The Role of **K2-MK7** in reversing arterial calcifications, is 180mcg or 360mcg the right dosage? PMID 26516190
- Non-Alcoholic Fatty Liver Disease (**NAFLD**) increases the risk of ASCVD by over 300%! PMID 25603326
- The importance of milk thistle extract, mixed tocopherols, alpha lipoic acid, possibly even the medicine metformin.
- An expanding recognition of gut microbiota and periodontal health gives further insights to the pathogenesis of ASCVD.

Nutritional Wellness

- The Journal of Nutrition, Jan 2017, has given us insight into the similarity of the Paleolithic (**Paleo**) to the Mediterranean diet, although both are good options. PMID 28179490
- The overall mortality benefits of 30-40% far overshadow any medicine trial for any known cardiovascular risk factor.

5/18/84

Larson



“Quit complaining and eat it! ... Number one, chicken soup is good for the flu, and number two, it’s nobody we know.”

The Orienting Generalizations of Nutrition

- Eating Awareness
- Eat Less, The Value of Intermittent Fasting (IF), Time-Restricted Feeding (TRF)
- Drink More Water
- Eat More Whole Foods
- Eat More Good Fats
- The 80/20 Rule
- Avoiding the Artificial

The Orienting Generalizations of Nutrition

- **Coffee**, possibly the healthiest substance ever!
- **Alcohol**, Low Dose is Different than High Dose!
- Silent Killers: Trans Fats and Excitotoxins
- **Primal Principles:**
 - Eat Like A Human, an Omnivore, Eat Organic
 - Eat Real Food, If it has a label....
 - Get Your Carbs from Fruits and Vegetables!
 - Eat No Grains except for occasional Indulgences
 - Eat more Nuts and Seeds, Eat Few Beans
 - Play and Feel Better

Exercise

- Not that you really need more evidence, but here is a great review from 09/2018 in “Frontiers in Cardiovascular Medicine” titled Cardiovascular Effects and Benefits of Exercise PMID 30324108
- As we age past 60, evidence profoundly points against weight as a mortality risk factor and instead points to aerobic and resistance fitness as it relates to the prevention of sarcopenia, the loss of lean body mass with age as the primary mortality risk factor as we age.

Exercise

- There are three levels of fitness and I recommend a minimum of seven hours per week on developing these specific lines of development.
- **Yogic Fitness**: Whether yoga, or good old American stretching, our *physical flexibility, balance, and core strength* hold so many keys to our long-term health, not just in the prevention of injury. (10-15 minutes per day)
- **Aerobic Fitness**: The best form of exercise: the one you will do! Whether hiking, kayaking, or biking, or a gym membership, commit and be consistent. (20-30 minutes per day; if less time, then increase the intensity!)
- **Resistance Fitness**: Whether yard work or some weight training, there is almost no way to maintain lean body mass without some form of resistance training. (20-30 minutes per day)

The Performance Pyramid



Self-Limiting Exercise



Stress and Health

- Perceived stress is our single greatest disease. A Danish trial, PMID 27407085, documented that in 4 years of follow-up, those with the highest rated perceived stress had approximately 40% higher mortality even after correcting for underlying disease severity, socioeconomic status, and lifestyle!
- Lao Tzu: “To gain knowledge, add something every day, to gain wisdom, let go of something every day.”

Stress Management

- See our **Stress Management Series** on our website.
 - A Stress Management Program:
 - **Stress Unloading**-especially true for women, balancing sacred feminine with sacred masculine
 - **Stress Relieving** – Exercise, usually with some intensity
 - **Stress Reduction/Self-Realization/Meditation**– The Meditative life is difficult, a life without meditation, impossible.
 - Stress Distraction, This remains what most people use to “ease their pain”, and although pleasuring oneself through reading, movies, food or drugs can distract you from stress, it never actually helps! The Danger of Screen Time.

The Last Word

I know that the principle of three hours per day (an hour per day for self-realization, exercise, and nutrition) of proactively healthy behaviors may seem a daunting task. I could argue that if happiness (a state of self-referral vs object-referral) and health is your primary purpose in life, then whatever time you do spend will be well worth it.

