



Séminaire
Winter Arrhythmia
School
Annual Cardiac Arrhythmia Meeting
Division of Cardiology, University of Toronto

“Omega 3 & Heart Failure”

As Well as Other Trivia

Sunnybrook Cardiology Conference

Feb 2017

Martin H. Strauss MD, FRCP, FACC
Cardiologist, North York General Hospital,
Toronto, Ontario

14th Annual
Collingwood, Ontario,
February 10 -12, 2017



**North York
General Hospital**
Including the IOOE Children's Centre
Embracing Health

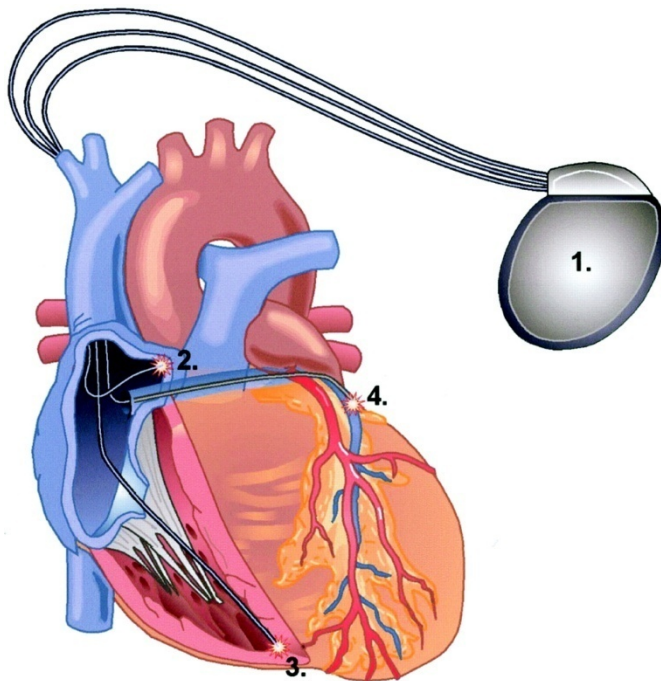
Disclosures

- ❑ No financial relationship or conflict of interests as it pertains to this CME



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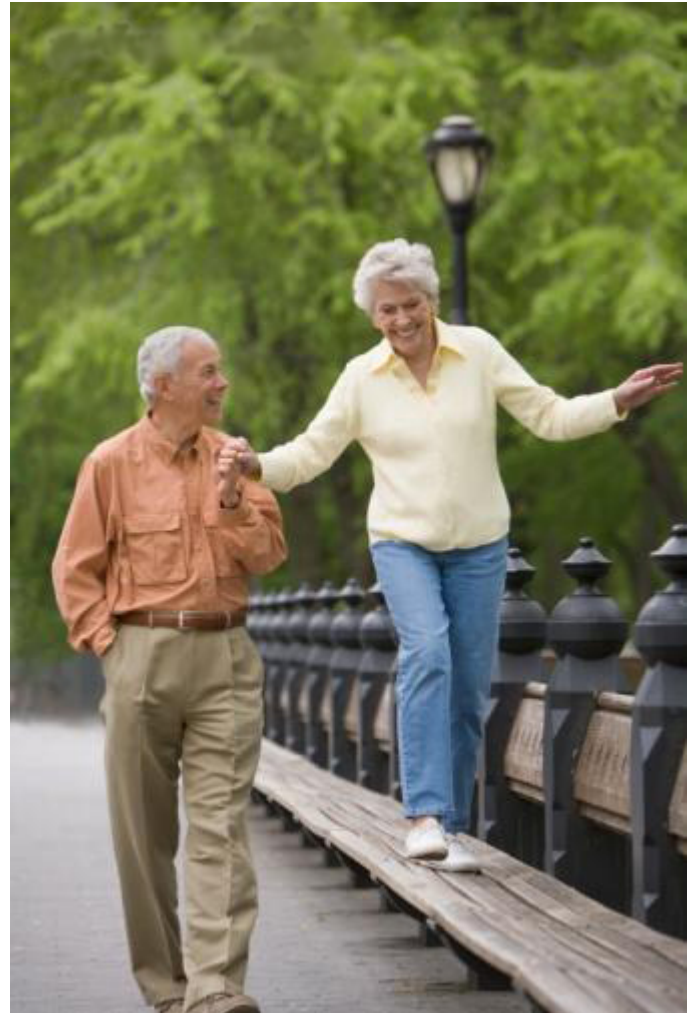
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Do The Guidelines Capture All The Important Treatments

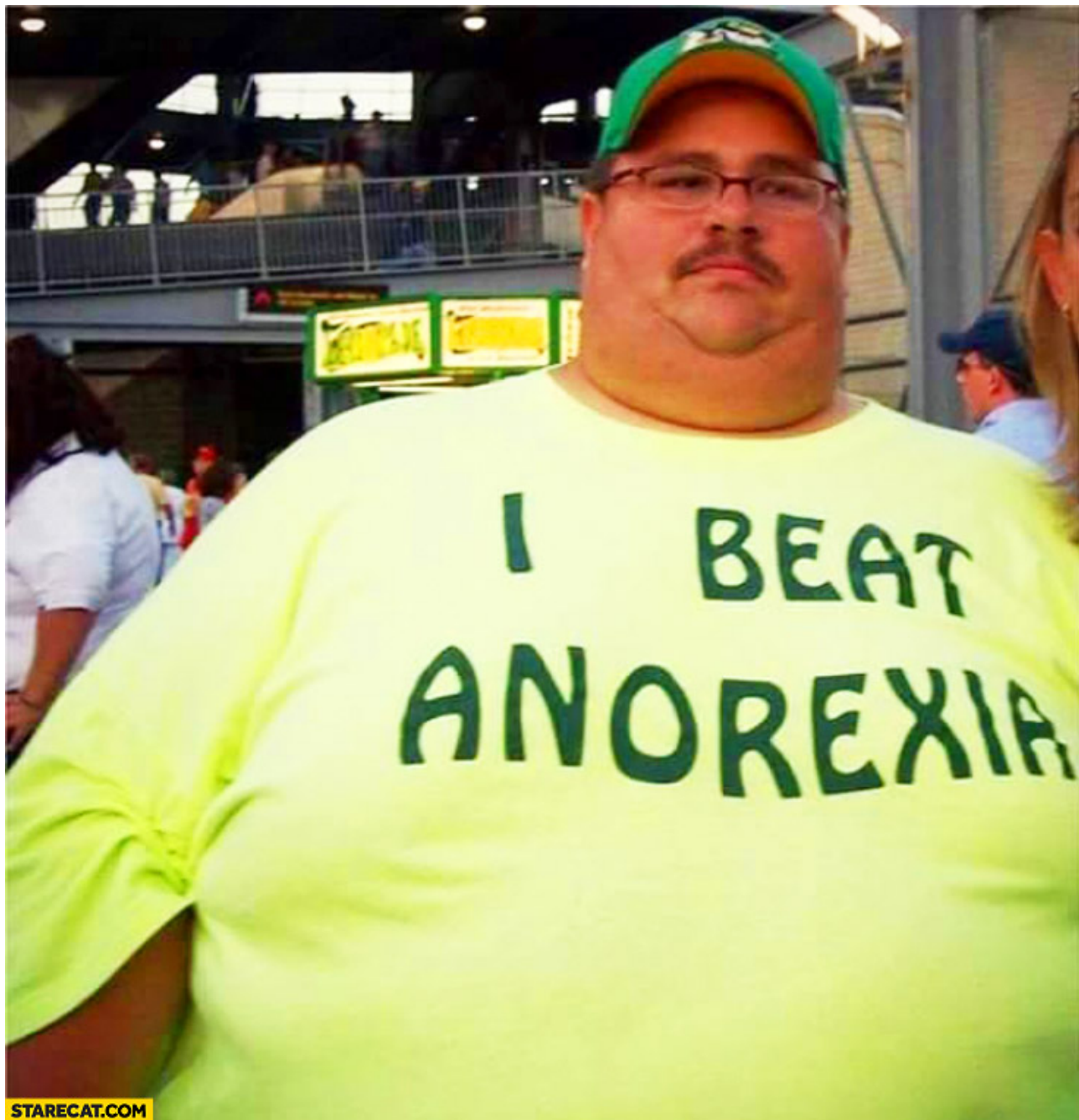




Cardio Exercise

What They Don't Teach Cardiologists

1. What keeps you in business?



OBESITY IN U.S.

1985

1991

1995

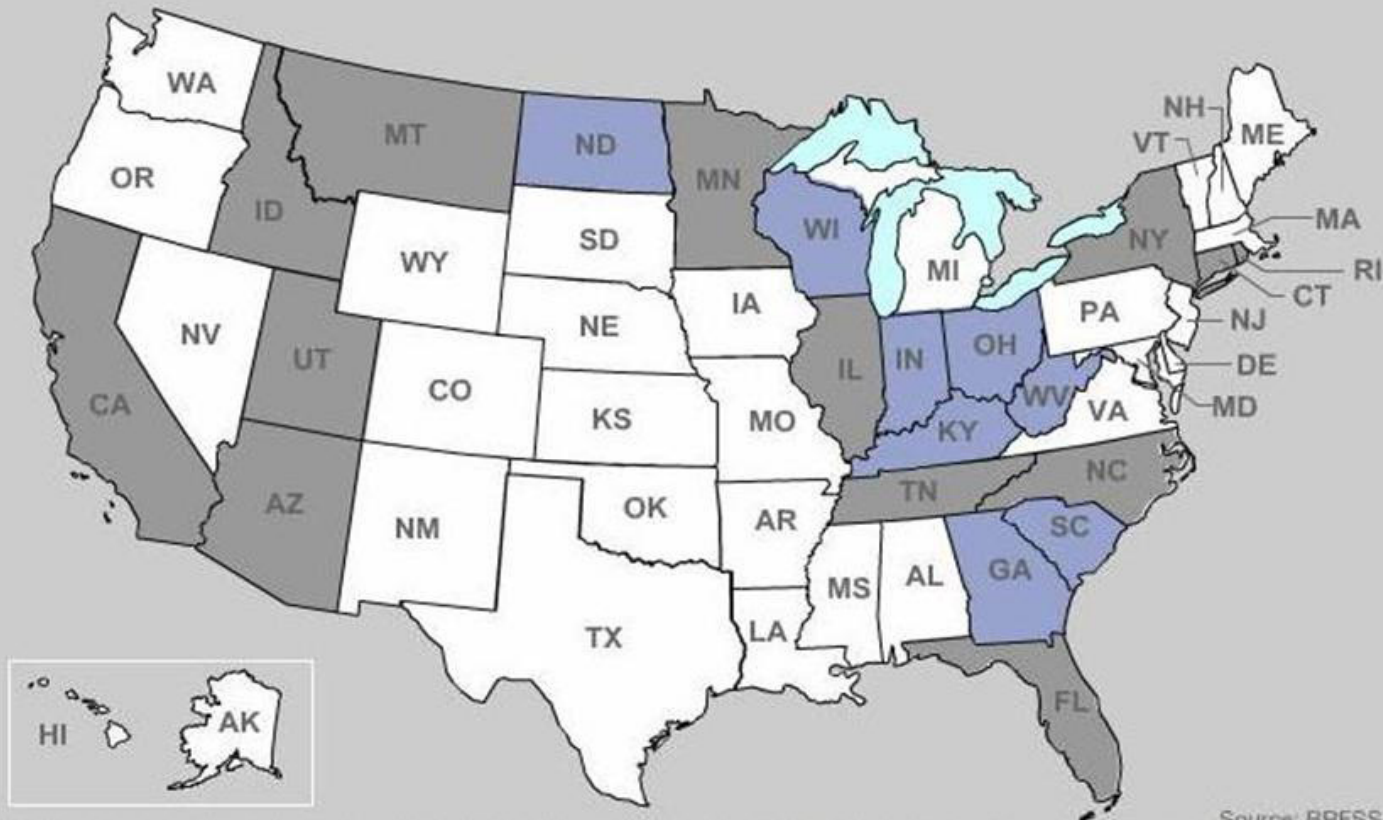
1997

2001

2004

2006

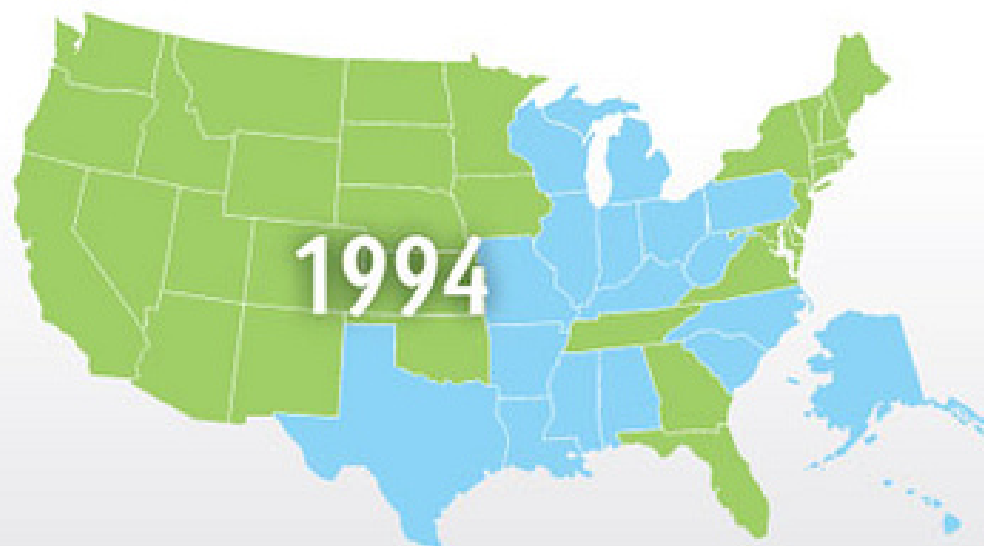
Over the past 20 years, Americans' waistlines have expanded, and top officials have declared obesity a top health threat. By examining the percentage of adults who are estimated as obese (about 30 pounds overweight for a 5'4" person), see how entrenched the condition has become over the years.*



* Obese is defined as having a Body Mass Index of 30 or higher. Data is based on state health departments' figures from monthly phone interviews with U.S. adults.

Source: BRFSS, CDC.

Keys: No Data <10% 10%-14% 15%-19% 20%-24% >25%



*% of obesity
by state*



10-14%



15-19%



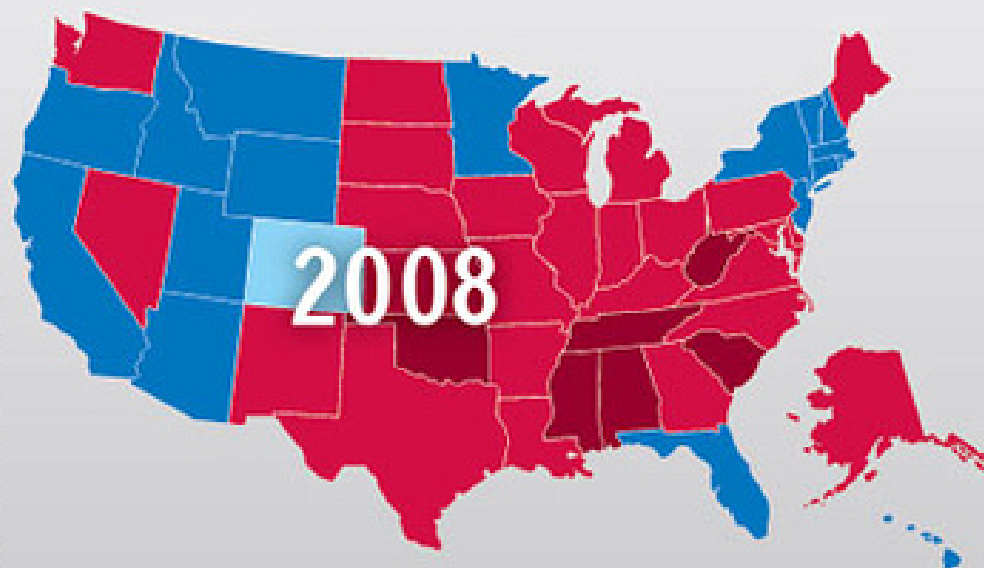
20-24%



25-29%



30%+



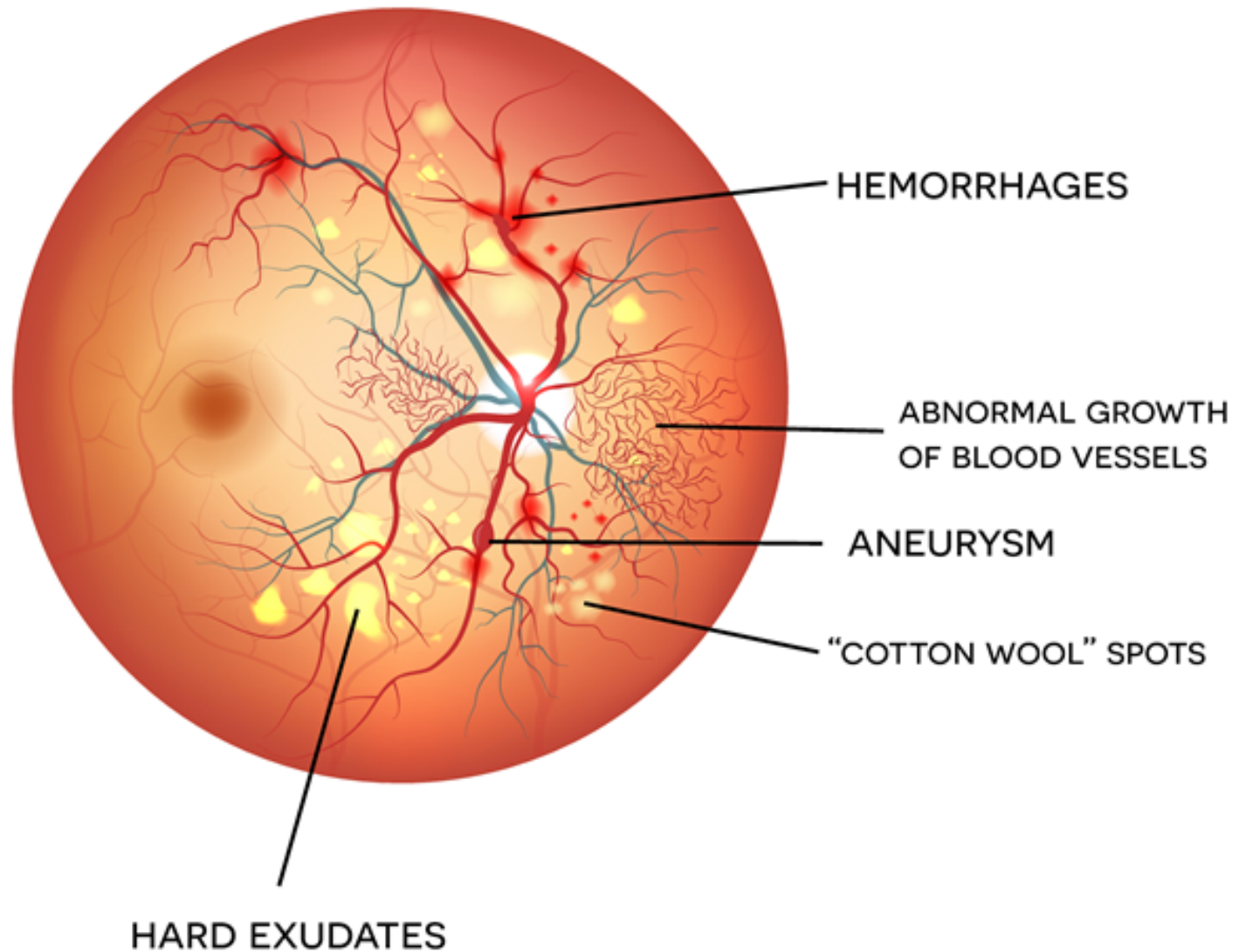
Source: Centers for Disease Control







DIABETIC RETINOPATHY





THE BIG FAT SURPRISE

Why Butter, Meat & Cheese
Belong In a Healthy Diet

NINA TEICHOLZ



THE
CLASSIC
MEDICAL EXPOSE,
with a new introduction
by childhood obesity expert
DR ROBERT LUSTIG, M.D.

Pure, White and Deadly



HOW SUGAR IS KILLING US
AND WHAT WE CAN DO
TO STOP IT

JOHN YUDKIN

Copyrighted Material

GARY TAUBES



The Case Against Sugar

*From the best-selling author of
Why We Get Fat*

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GOOD
CALORIES,



BAD
CALORIES

FATS, CARBS, AND THE CONTROVERSIAL
SCIENCE OF DIET AND HEALTH

GARY TAUBES

WHY
WE
GET
FAT

AND
WHAT
TO DO
ABOUT IT



GARY TAUBES

AUTHOR OF GOOD CALORIES, BAD CALORIES

the | COMPLETE
GUIDE | to
FASTING

Heal Your Body Through
Intermittent, Alternate-Day, and Extended Fasting



Dr. Jason Fung

with Jimmy Moore

What They Don't Teach Cardiologists

1. What keeps you in business and why
2. Omega 3 – the role in CHF

TABLE 5. Summary of Recommendations for Omega-3 Fatty Acid Intake

Population	Recommendation
Patients without documented CHD	Eat a variety of (preferably oily) fish at least twice a week. Include oils and foods rich in α -linolenic acid (flaxseed, canola, and soybean oils; flaxseed and walnuts)
Patients with documented CHD	Consume ≈ 1 g of EPA+DHA per day, preferably from oily fish. EPA+DHA supplements could be considered in consultation with the physician.
Patients needing triglyceride lowering	Two to four grams of EPA+DHA per day provided as capsules under a physician's care

Society Guidelines

The 2012 Canadian Cardiovascular Society Heart Failure Management Guidelines Update: Focus on Acute and Chronic Heart Failure

RECOMMENDATION

ACE inhibitor

1. We recommend an ACE inhibitor be used in all patients as soon as safely possible after a MI and be continued indefinitely if EF < 40% or if HF complicates a MI (Strong Recommendation, Moderate-Quality Evidence).

MRA

9. We recommend MRA be used in patients with HF during standard therapy if EF < 35% if QRS is normal, hospitalization, NT-proBNP, and Quality Evidence.

RECOMMENDATION

β -Blocker

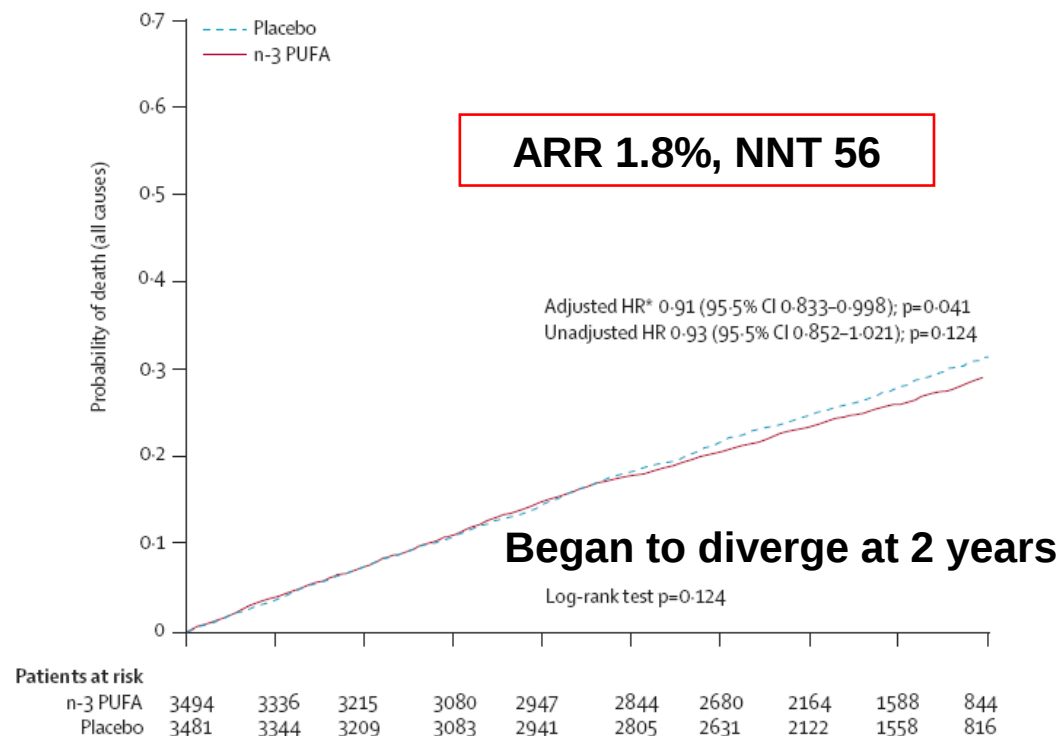
1. We recommend all HF patients with an EF \leq 40% receive a β -blocker proven to be beneficial in clinical trials (Strong Recommendation, Moderate-Quality Evidence).

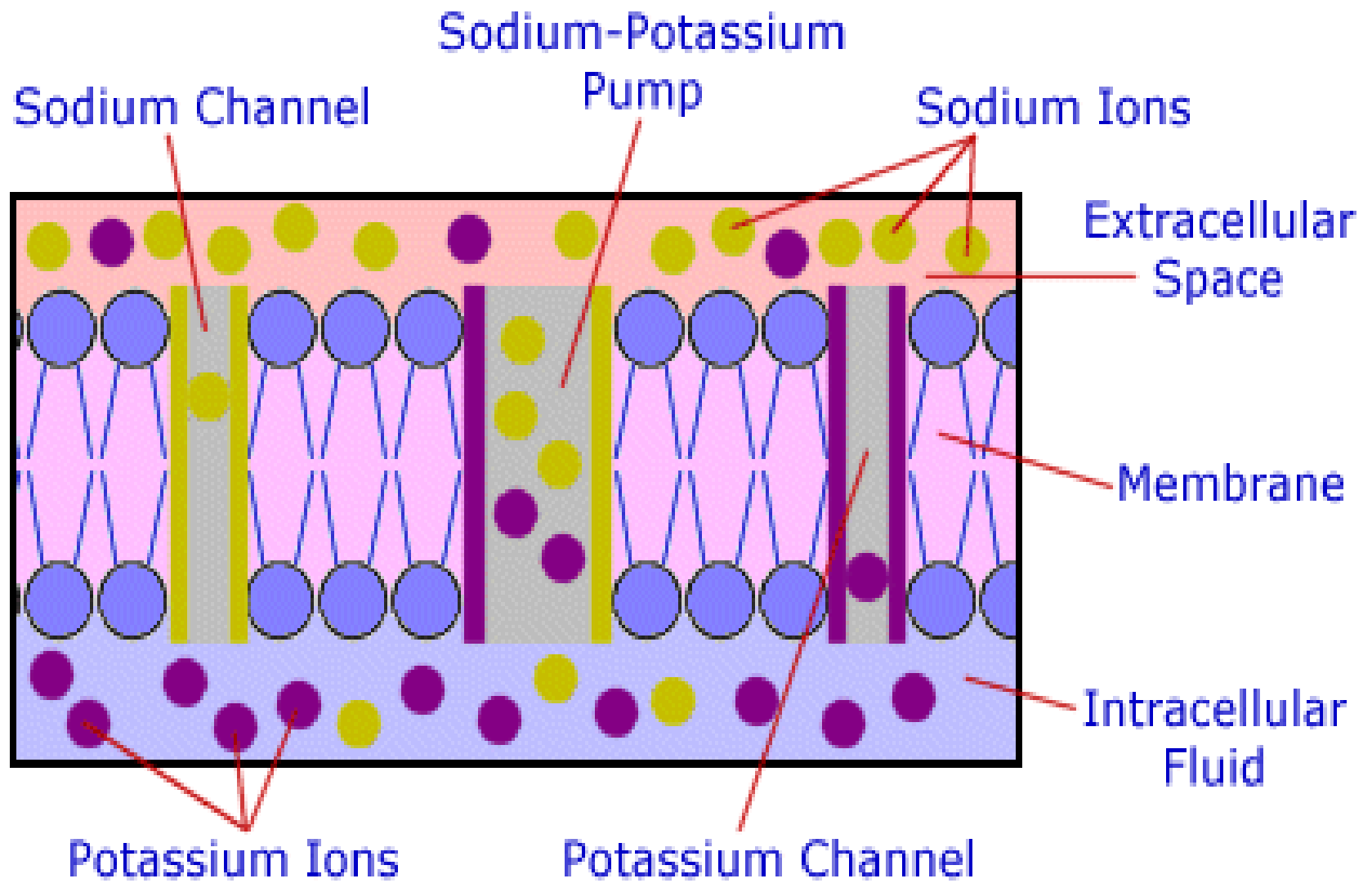
Omega-3 polyunsaturated fatty acids

6. We recommend omega-3 polyunsaturated fatty acid therapy at a dose of 1 g daily be considered for reduction in morbidity and CV mortality in patients with mild to severe HF and reduced EF (Strong Recommendation, Moderate-Quality Evidence).

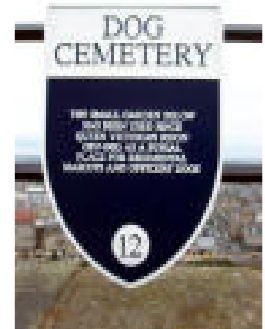
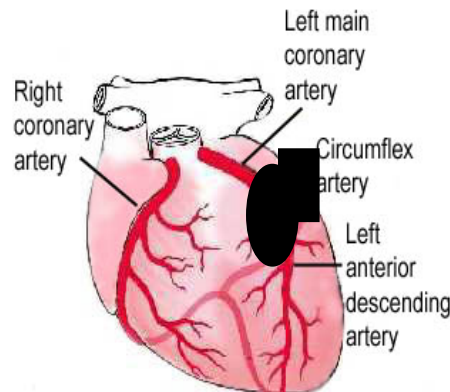
Effect of n-3 polyunsaturated fatty acids in patients with chronic heart failure (the GISSI-HF trial): a randomised, double-blind, placebo-controlled trial

GISSI-HF investigators*





Prevention of Sudden Cardiac Death by Dietary Pure Omega-3 FFA in Dogs

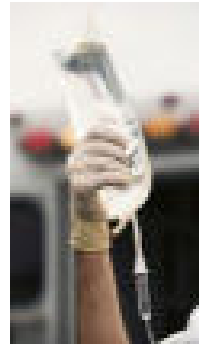
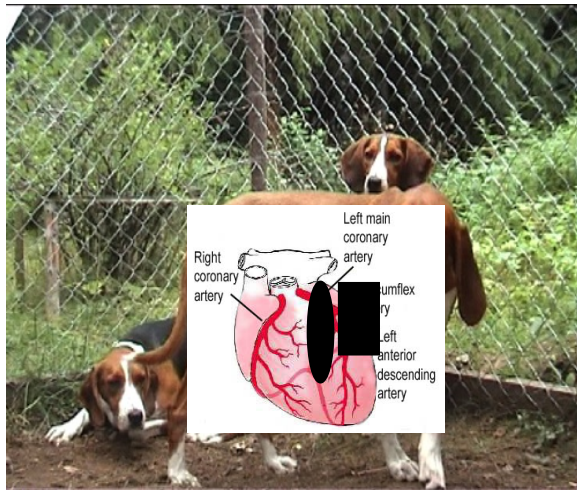


4 weeks
Recovery & Personal Trainer



Circ. May 11, 1999:2452-2457

Prevention of Sudden Cardiac Death by Dietary Pure Omega-3 FFA in Dogs

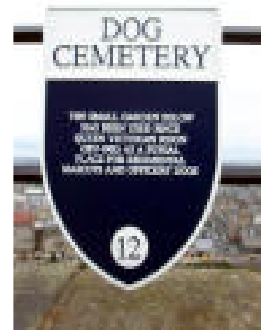


1 week

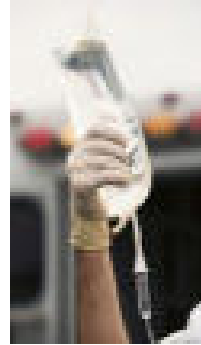
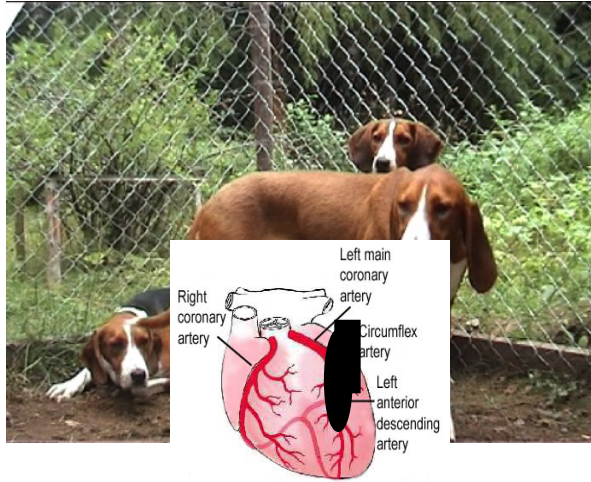


**Phospholipid
Carrier**

100%



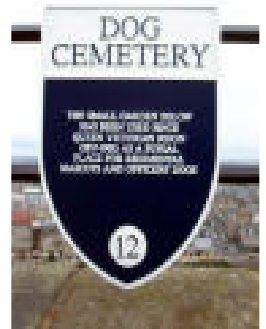
Prevention of Sudden Cardiac Death by Dietary Pure Omega-3 FFA in Dogs



1 week
EPA
DHA
ALA



EPA 2/7
DHA 2/8
ALA 2/8

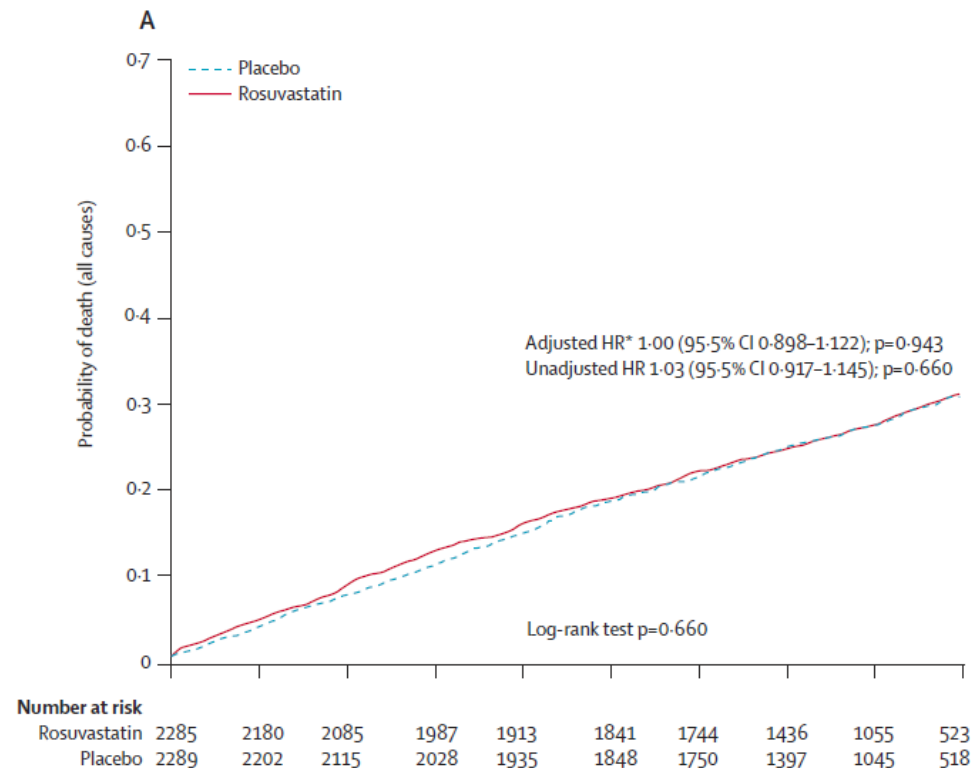


What They Don't Teach Cardiologists

1. What keeps you in business and why
2. Omega 3 – the role in CHF
3. Statins – the role in CHF

Effect of rosuvastatin in patients with chronic heart failure (the GISSI-HF trial): a randomised, double-blind, placebo-controlled trial

GISSI-HF investigators*





PRAVACHOL[®]
(pravastatin sodium) 40 mg
tablets

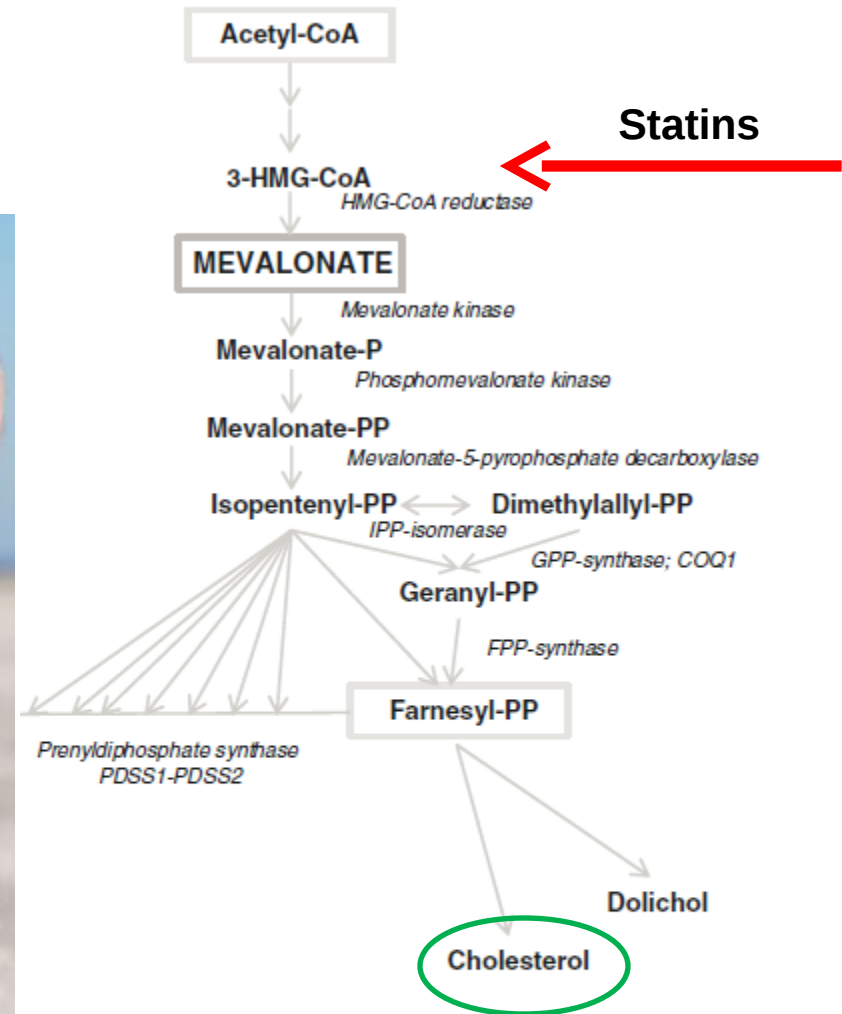
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Lovastatin
Tablets USP



40 mg





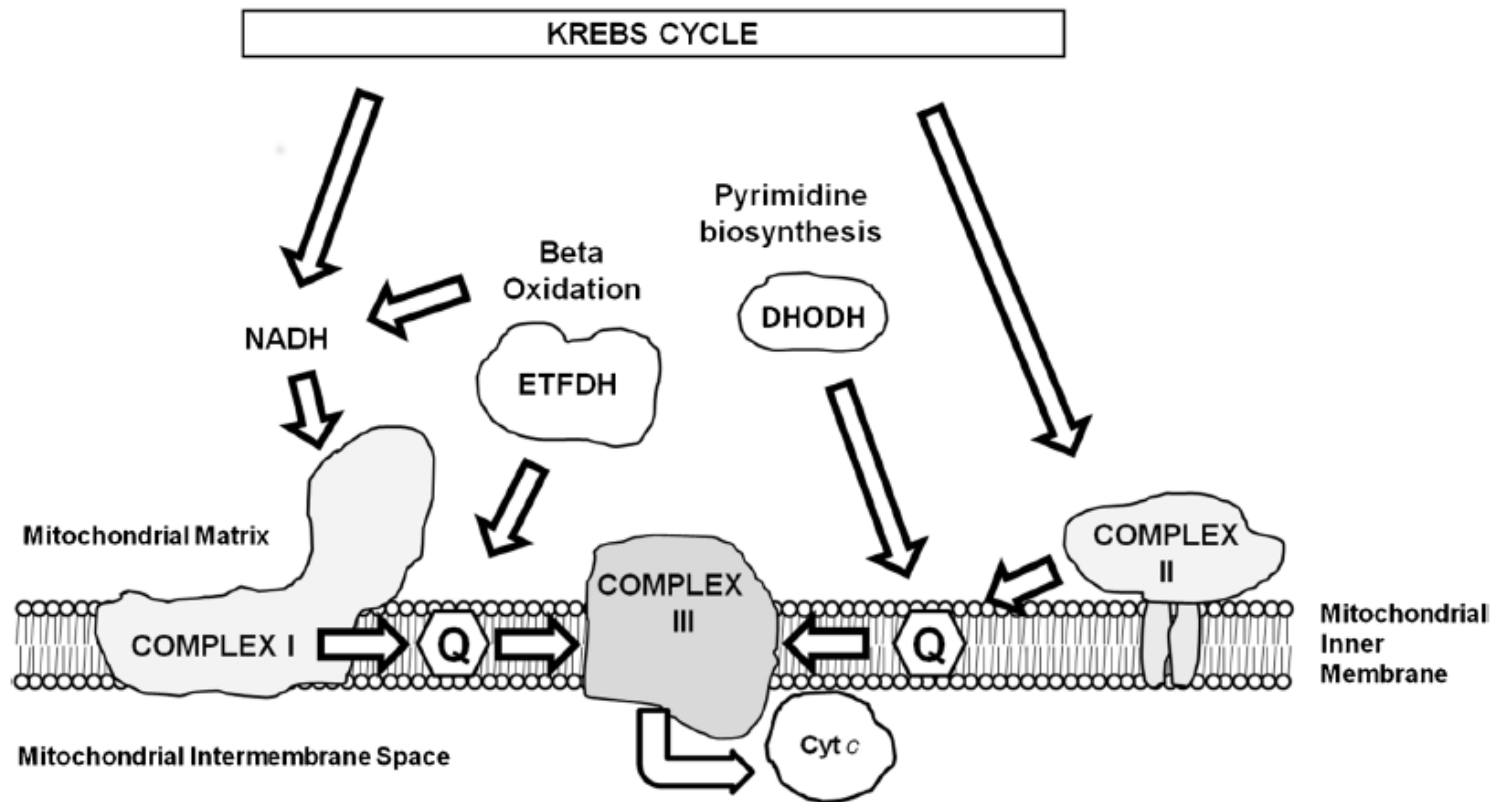
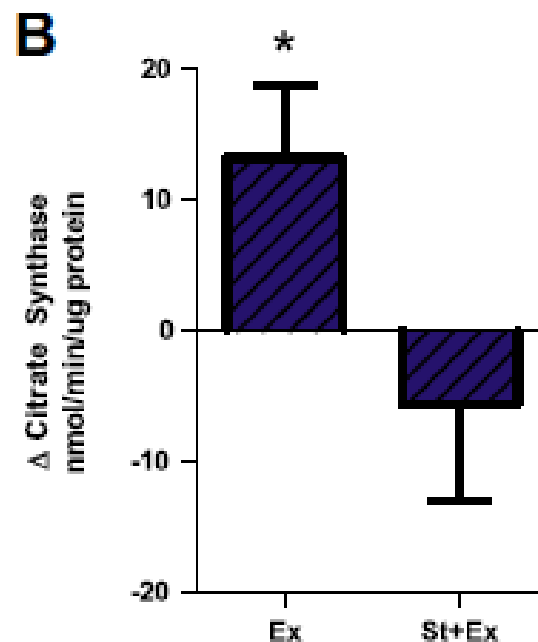
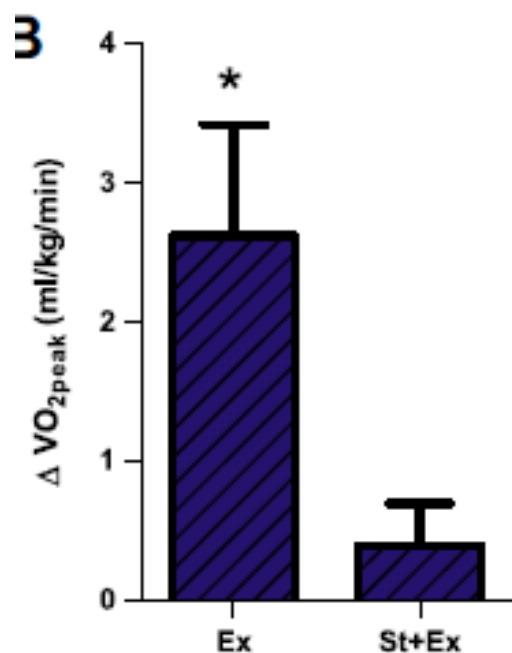


Fig. 1 The main roles of enzyme Q (Q) in mitochondrial metabolism. The *arrows* indicate electron flow through these pathways. ETFDH = electron transfer flavoprotein dehydrogenase, DHODH = dihydroorotate dehydrogenase, Cyt *c* = cytochrome *c*

Simvastatin Impairs Exercise Training Adaptations

Catherine R. Mikus, PhD,* Leryn J. Boyle, MSc,† Sarah J. Borengasser, PhD,‡



What They Don't Teach Cardiologists

1. What keeps you in business and why
2. Omega 3 – the role in CHF
3. Statins – the role in CHF
4. Co-Enzyme Q10 – the role in CHF

The Effect of Coenzyme Q₁₀ on Morbidity and Mortality in Chronic Heart Failure

Results From Q-SYMBIO: A Randomized Double-Blind Trial

DBRCT – CoQ10 100 mg tid vs. placebo

- Multi-centered trial
- Class 3-4 CHF, dilated LV, EF = 31%, n=420, med r'x
- 16 week – No Δ symptoms, 6 min walk, BNP, EF
- 2 yr – all cause mortality 10% vs. 18%, p=0.02, RRR 42%, NNT to prevent 1 death = 13
 - CV deaths ↓ 43%
 - admissions CHF 18% vs. 31%, RRR 49%, p=0.03
 - Improved NYHA class 58% vs. 45%, p=0.03)

What They Don't Teach Cardiologists

1. What keeps you in business and why
2. Omega 3 – the role in CHF
3. Statins – the role in CHF
4. Co-Enzyme Q10 – the role in CHF
5. Iron - the role in CHF

Systematic Review/Meta-analysis

The Efficacy and Safety of Iron Supplementation in Patients With Heart Failure and Iron Deficiency: A Systematic Review and Meta-analysis

Cheng Qian, MD,* Baozhu Wei, MD, PhD,* Jinye Ding, MD, Huiting Wu, MD,
and Yanggan Wang, MD, PhD

Department of Cardiology, Zhongnan Hospital of Wuhan University, Wuhan, 430071, China

Editorial

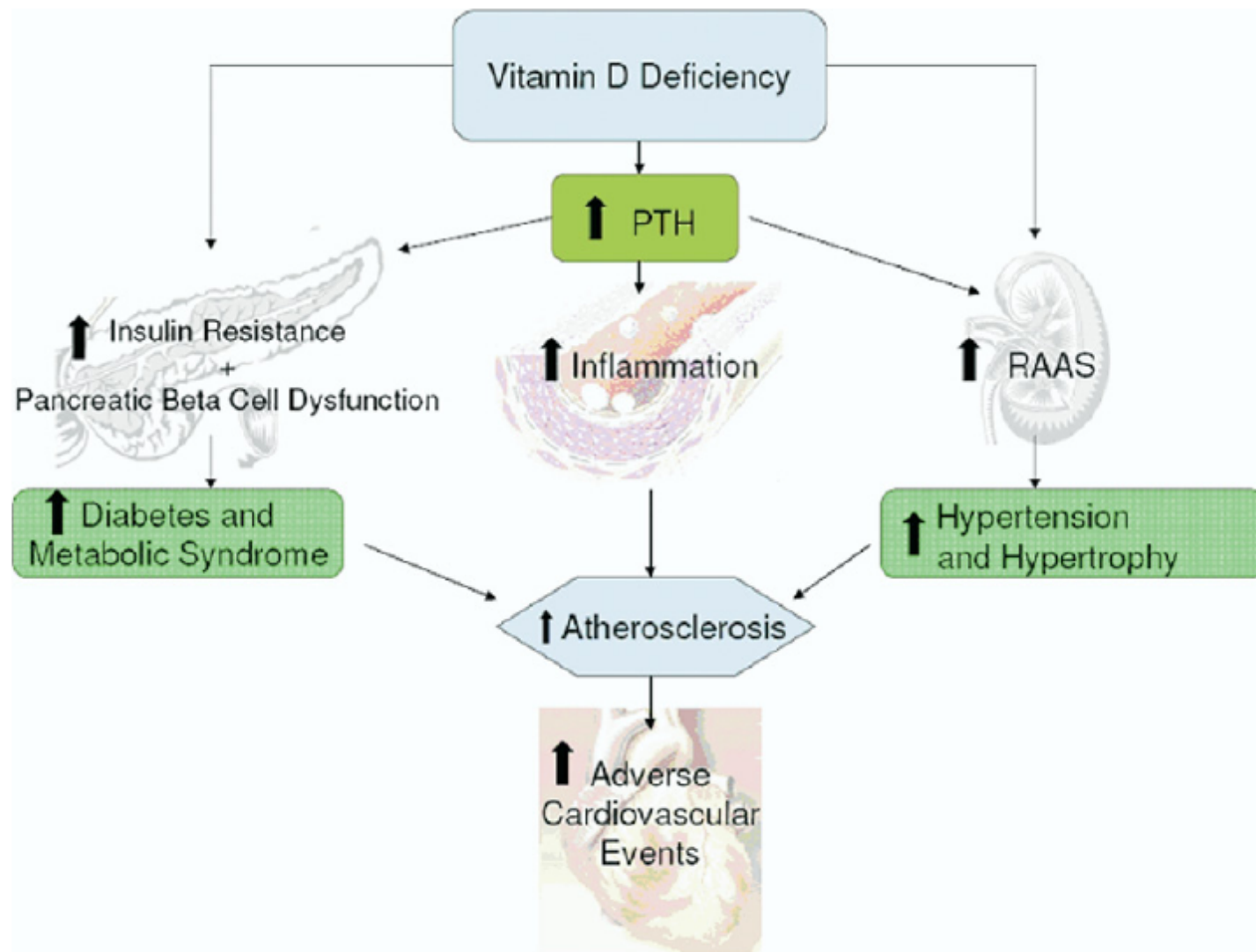
Heart Failure, Iron Deficiency, and Supplementation: Where Do We Stand?

Eileen O'Meara, MD, FRCPC,^a Simon de Denus, BPharm, MSc, PhD,^{a,b}
and Serge Lepage, MD, FRCPC^c



What They Don't Teach Cardiologists

1. What keeps you in business and why
2. Omega 3 – the role in CHF
3. Statins – the role in CHF
4. Co-Enzyme Q10 – the role in CHF
5. Iron - the role in CHF
6. Vitamin D - the role in CHF



Effects of Vitamin D on Cardiac Function in Patients With Chronic HF



The VINDICATE Study

- EF < 45%, Vit D < 50 nmol/l, 4,000 IU Vit D for 1 year
- N=233
- No Change 6 min walk (underpowered)
- BUT.....
 - EF increased 6% - similar MADIT CRT
 - LV size decreased 2 mm
 - Vit D level 24 vs. 115
 - PTH 10.8 vs. 8.7

Looking for a Brighter Future in Heart Failure

A Role for Vitamin D Supplementation?*

Deepak K. Gupta, MD, Thomas J. Wang, MD

Vitamin D for Cancer Prevention: Global Perspective

CEDRIC F. GARLAND, Dr PH, FACE, EDWARD D. GORHAM, MPH, PhD, SHARIF B. MOHR, MPH,
AND FRANK C. GARLAND, PhD

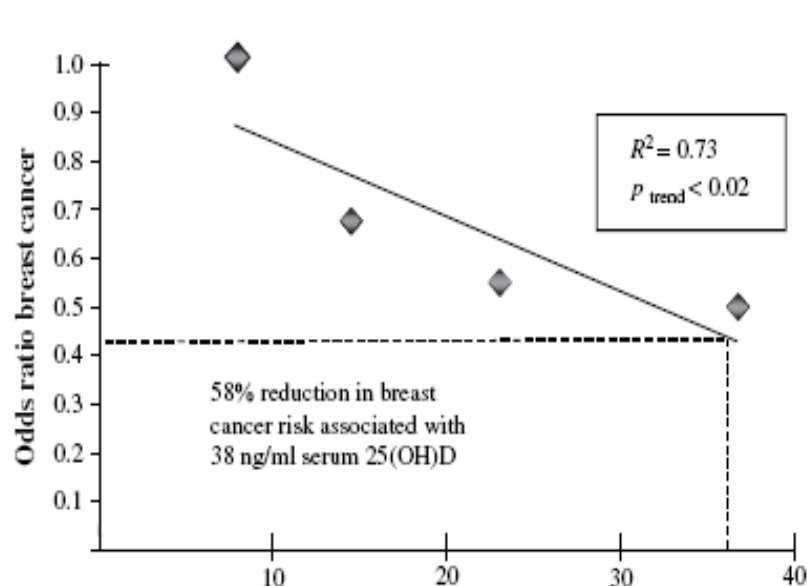


FIGURE 2. Pooled odds ratio for breast cancer, according to serum 25(OH)D concentration, meta-analysis, 2008. (Sources: Bertone-Johnson et al. [5], Lowe et al. [4], Garland et al. [57].) (Graphic: E. D. Gorman.)

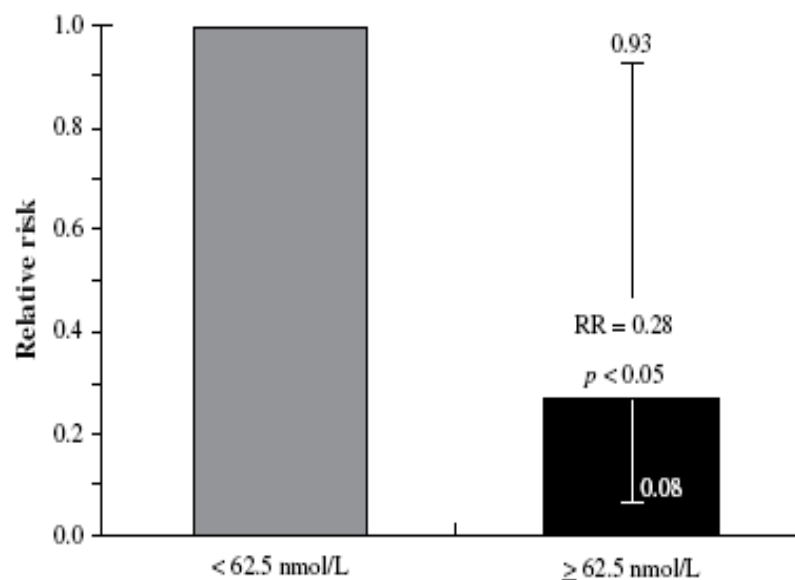


FIGURE 1. Relative risk of breast cancer mortality, by baseline serum 25(OH)D concentration, divided at the median, NHANES III cohort, 1988–2000. (Source: Drawn from data in Freedman et al. [56].)

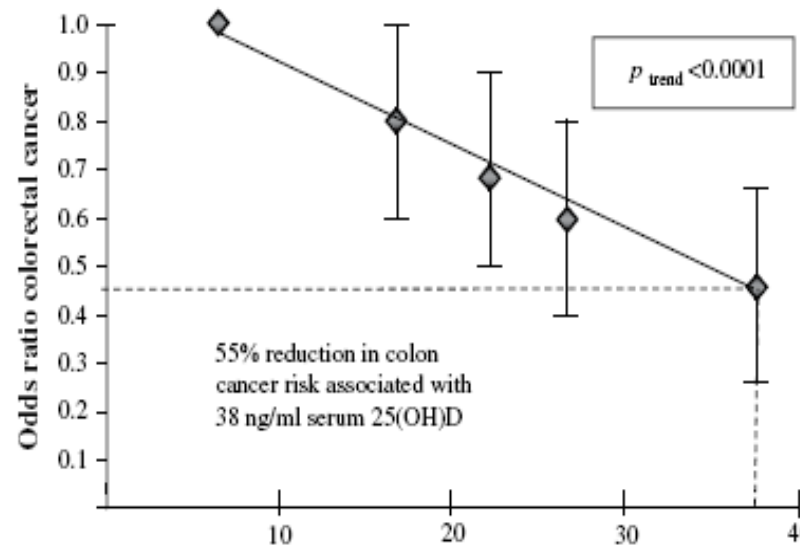


FIGURE 4. Pooled odds ratio for colorectal cancer, according to serum 25(OH)D concentration, meta-analysis, 2007. (Source: meta-analysis of six studies: Gorham et al. [61].) (Graphic: E. I. Gorham, S. B. Mohr.)

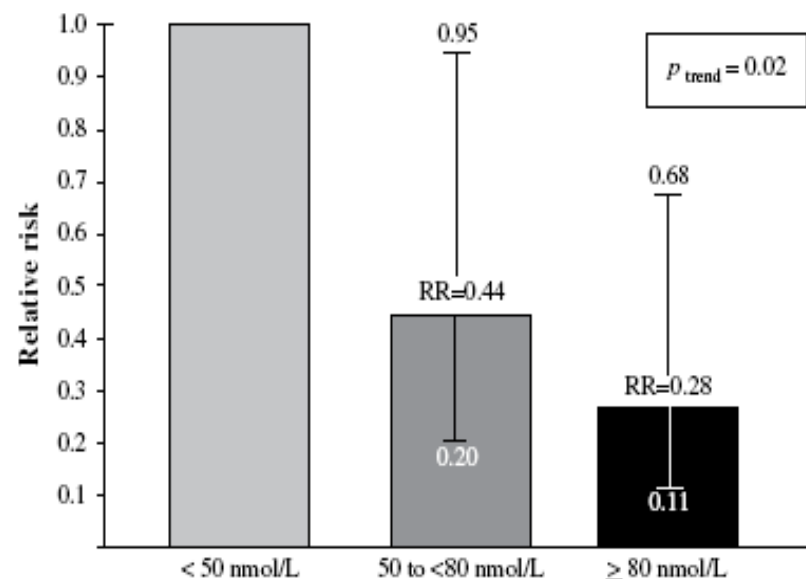


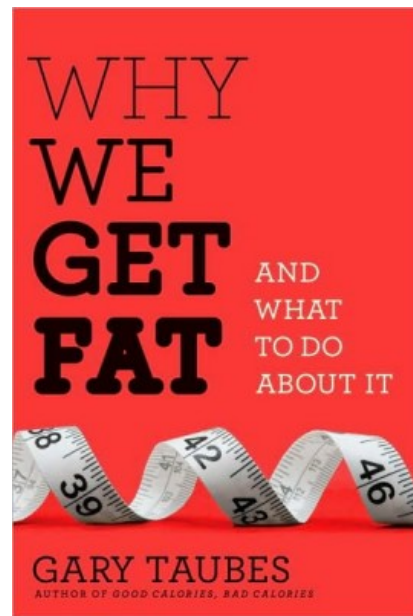
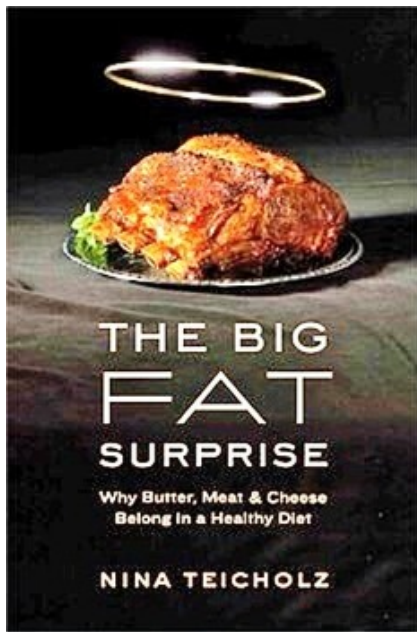
FIGURE 3. Relative risk of colon cancer mortality, by baseline serum 25(OH)D concentration, in tertiles, NHANES cohort, 1988-2000. (Source: Drawn from data in Freedman et al. [56].)

Vitamin D Supplementation and Total Mortality

A Meta-analysis of Randomized Controlled Trials

Philippe Autier, MD; Sara Gandini, PhD

- ❑ 18 RCT of Vitamin D – secondary endpoint mortality
- ❑ N=57,311 x 5.7 yrs, 4,777 deaths
- ❑ Dose range 300 – 2,000 IU, mean 528 IU
- ❑ Results independent of calcium supplementation
- ❑ Over ½ the patients were young women (WHI) so any reduction in mortality not secondary to Δ in falls
- ❑ 7% relative risk reduction in mortality $p < 0.05$



Dr.Marty@bellnet.ca

Thank-you

