VS.

Are life and health insurance aligned?

Who sets standards of health for life insurance companies?

Are they based on health or insurance goals?

HealthCare.gov

Misaligned Incentives

80/20 Rule

The 80/20 Rule generally requires insurance companies to spend at least 80% of the money they take in from premiums on health care costs and quality improvement activities. The other 20% can go to administrative, overhead, and marketing costs.

The 80/20 rule is sometimes known as Medical Loss Ratio, or MLR. If an insurance company uses 80 cents out of every premium dollar to pay for your medical claims and activities that improve the quality of care, the company has a Medical Loss Ratio of 80%.

- As costs go up – profits go up
- An incentive for promoting poor health
- At odds with the life insurance goals

CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)

CHRONIC DISEASES IN AMERICA

6 IN 10

Adults in the US have a **chronic disease**

4 IN 10

Adults in the US have **two or more**

THE LEADING CAUSES OF DEATH AND DISABILITY

and Leading Drivers of the Nation's **$4.1 Trillion** in Annual Health Care Costs

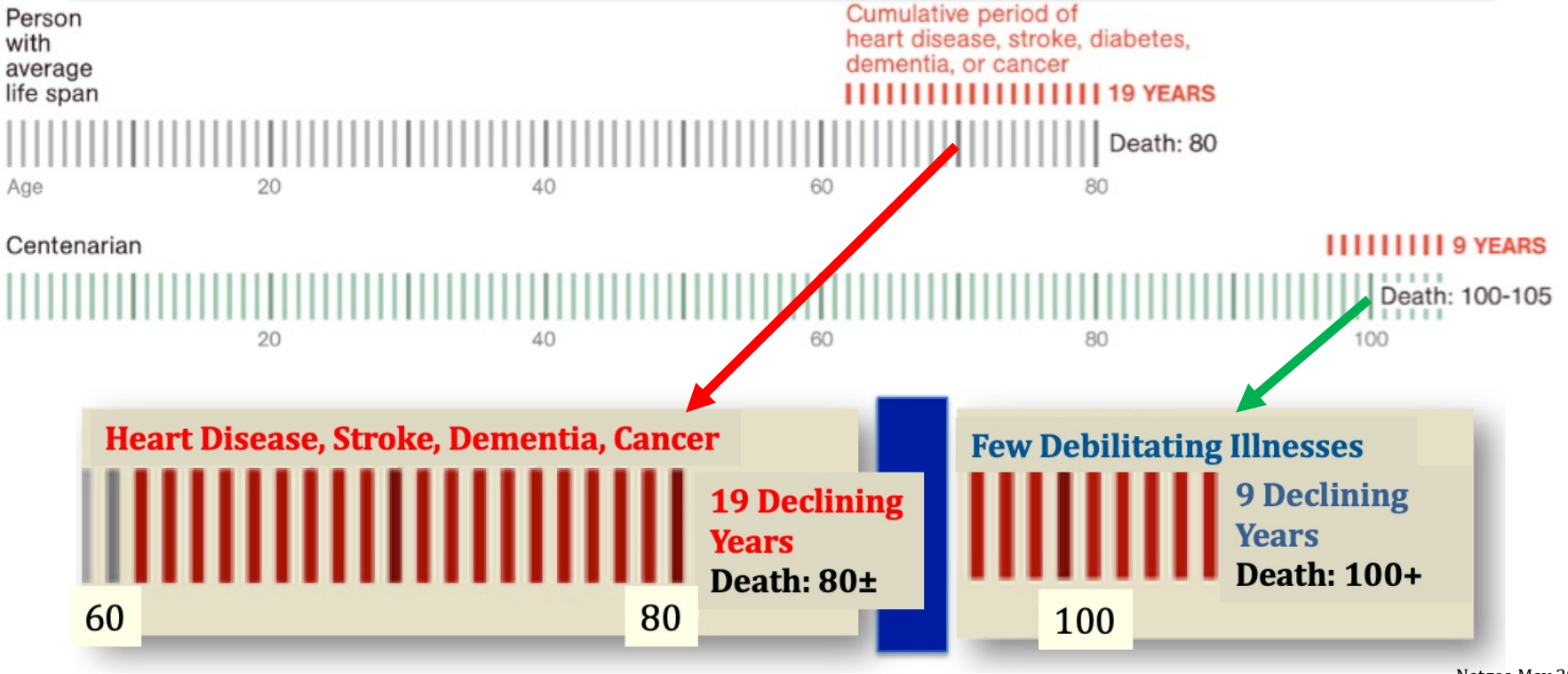
---

In 1900, almost one-half of all deaths were due to acute conditions, yet as we close the twentieth century, only about one-in-ten deaths is due to an acute condition (CDC, 1997). in 1900. One hundred years ago only one-in-six people died of a chronic condition.

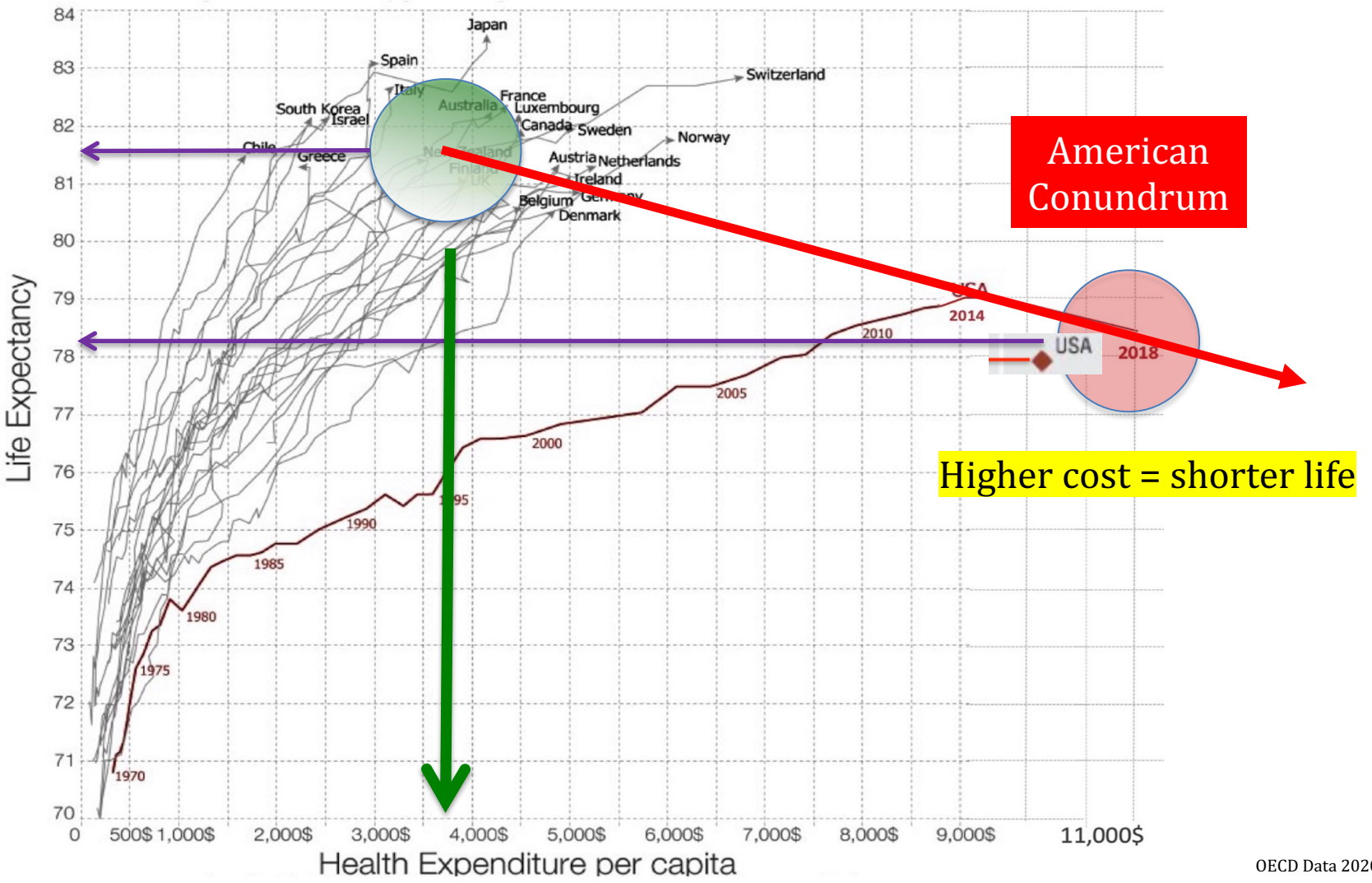
16% to 60%

Getting to 100 candles

Living to 100 grants a person 20 extra years of longevity.
Significantly – they experience 30 years of extra "healthspan."
when compared to those who die at 80 (or younger).



Natgeo May 2013



OECD Data 2020

Life Insurance Goal: Clients live to 100

Health Insurance Goal: Patients live to 80

Last modified on Jul 09, 2021

Reference Ranges and What They Mean

Board Approved

Fundamental OBJECTIVE measurements are flawed

- **A normal result in one lab may be abnormal in another:** ***You must use the range supplied by the laboratory that performed your test to evaluate whether your results are "within normal limits."*** While accuracy of laboratory
- **A normal result does not promise health:** While having all test results within normal limits is certainly a good sign, it's not a guarantee. For many tests, there is a lot of overlap among results from healthy people and those with diseases, so there is still a chance that there could be an undetected
- **An abnormal result does not mean you are sick:** A test result outside the reference range may or may not indicate a problem. Since many reference values are based on statistical ranges in healthy people, you may be one of the healthy people outside the statistical range, especially if your value is

testing.com/articles/laboratory-test-reference-ranges/

When biomarker ranges of normal are incorrect, populations become less healthy

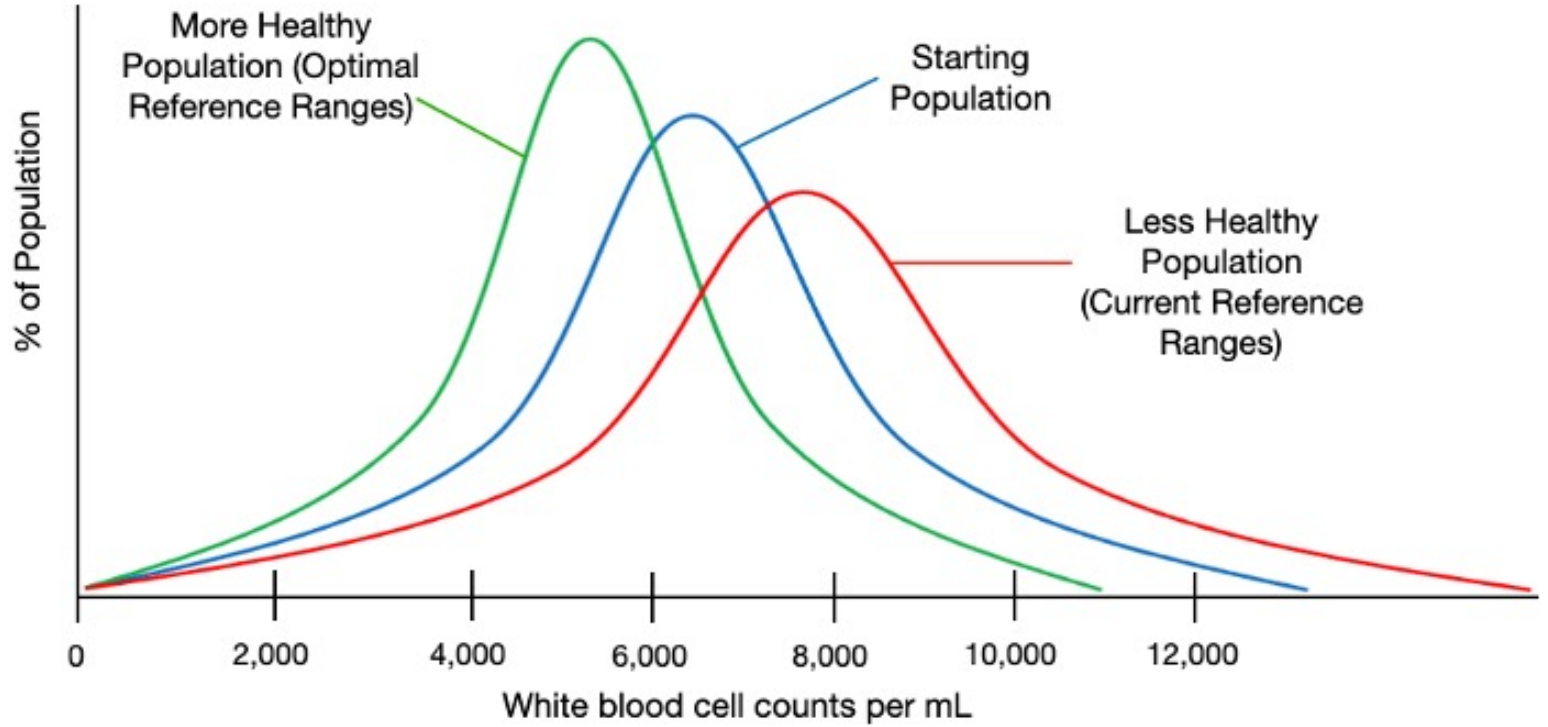


Figure 2. Broadening of reference range as the population becomes less healthy (blue to red curves) and narrowing of the reference range as the population becomes healthier (blue to green curves). The transition from the starting population to the less healthy population is reflected in the changes to laboratory reference ranges for WBC counts.

Health Revival Partners

Evidence-Based Biomarkers Normal Ranges

Health Revival Partners

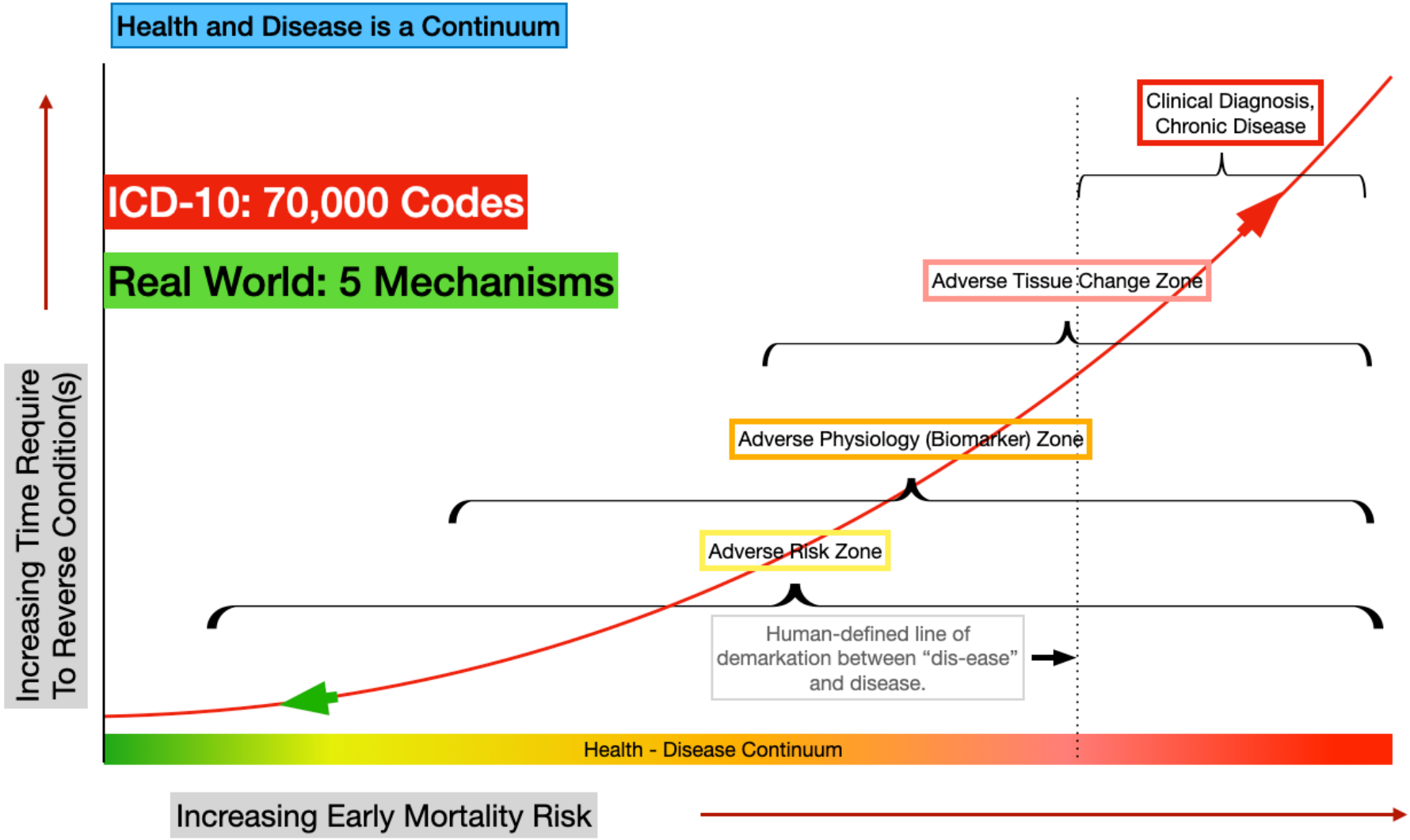
MI, algorithms, & protocols developed by scientists and practicing doctors

The Washington Post

Health

Chronic inflammation is long lasting, insidious, dangerous. And you may not even know you have it.

"Unlike acute inflammation, which benefits health by **promoting healing and recovery**, chronic inflammation is characterized by **persistent increases in inflammatory proteins** all throughout the body and can damage health and promote **several major diseases**," says George Slavic, associate professor of psychiatry and biobehavioral sciences at UCLA.


Health and Disease is a Continuum
ICD-10: 70,000 Codes
Real World: 5 Mechanisms
Clinical Diagnosis, Chronic Disease
Adverse Tissue Change Zone
Adverse Physiology (Biomarker) Zone
Adverse Risk Zone
Human-defined line of demarkation between "dis-ease" and disease.
Increasing Time Require To Reverse Condition(s)
Health - Disease Continuum
Increasing Early Mortality Risk

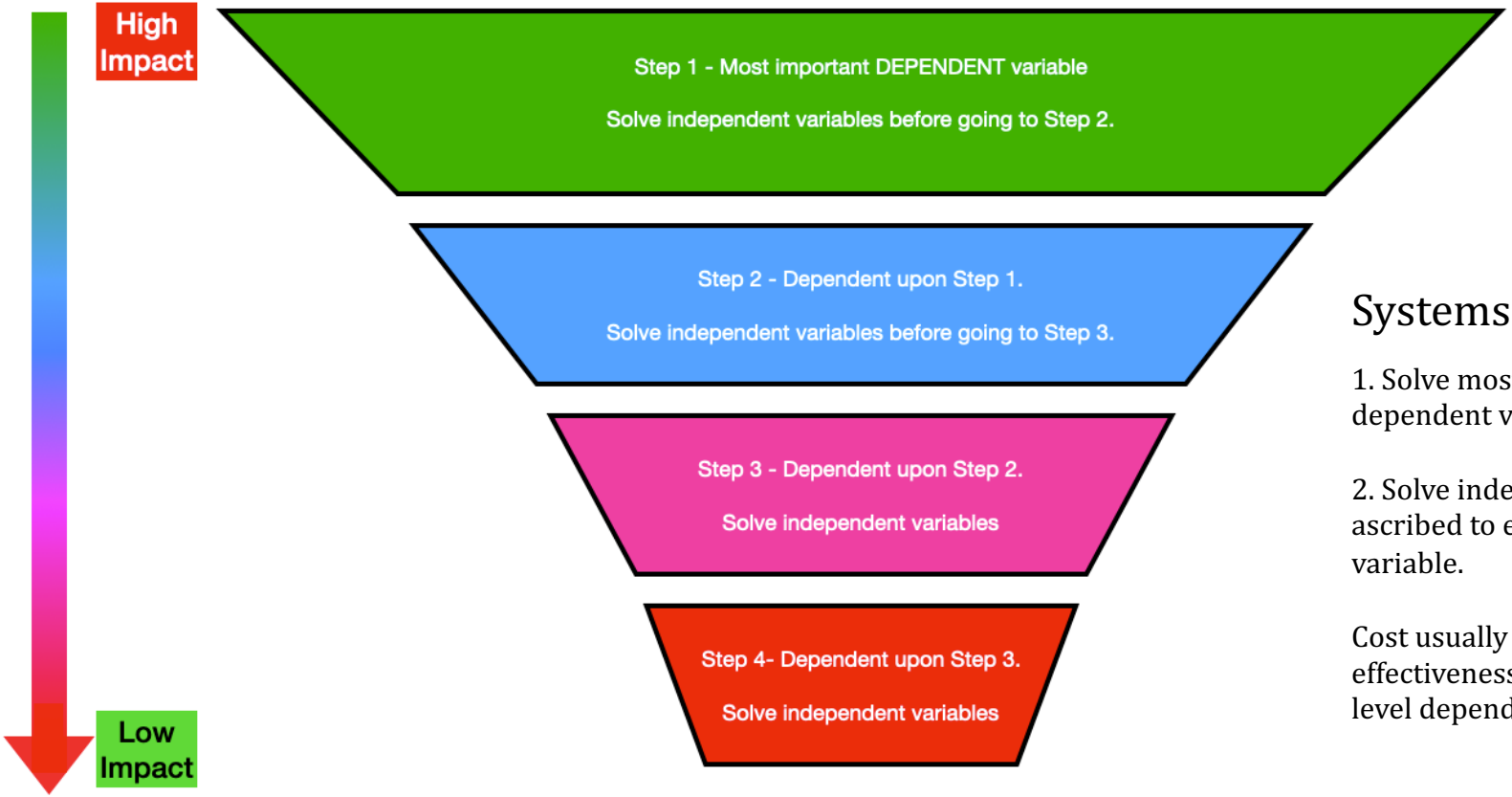
5 mechanisms of Disease

There are ~70,000 or medical diagnoses. However, my team operates based on 5 disease mechanisms that contribute to most morbidity & mortality. These mechanisms are:

1. Poor micronutrient status from poor diets, behaviors, or poor absorption.
2. Thrive vs survive. Stressors that create vulnerability.
3. Stealth and chronic infections and toxins with infections being the greatest offender. (When we die, we are “pickled.” They are already there!
4. Perpetual low-grade inflammation caused by infections, specific sensitives, and processed foods.
5. Lack of autophagy due to sedentary lifestyle and constant eating.

This established a roadmap to prioritization.

Hierarchy of Health



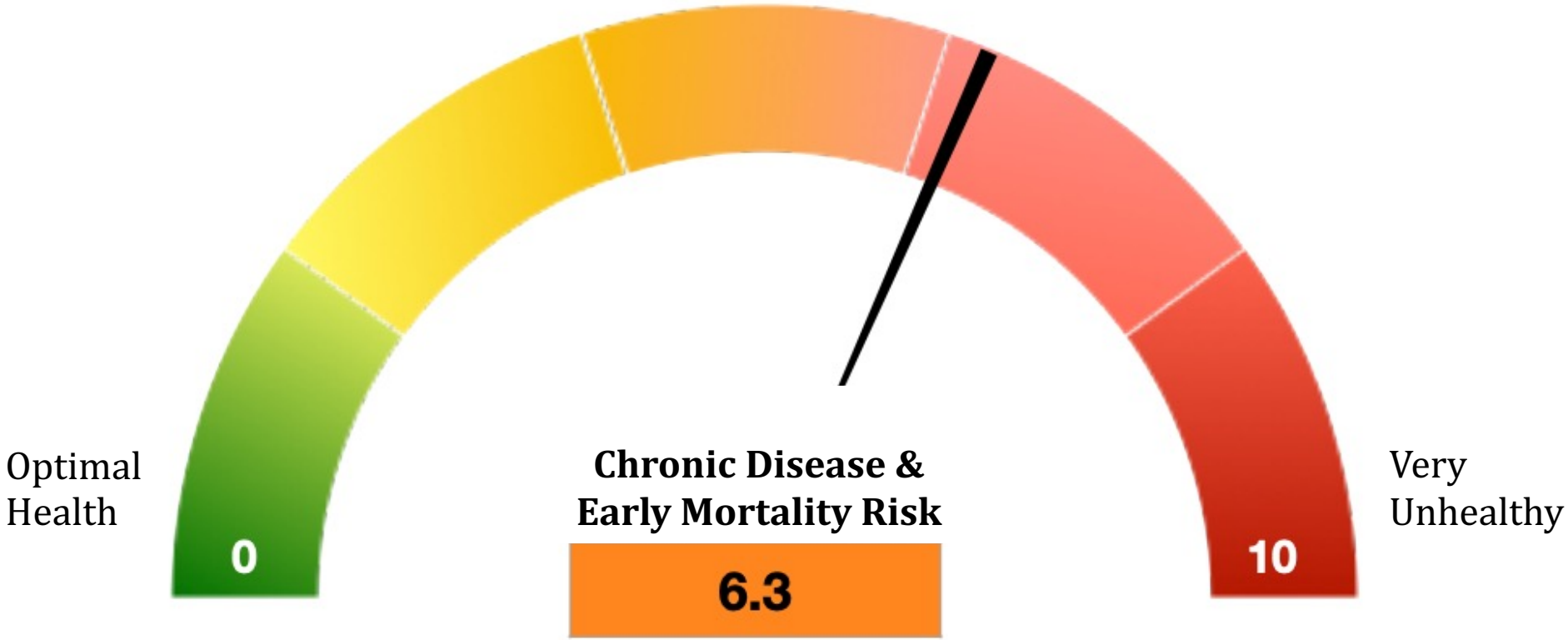
Systems Approach:

1. Solve most impactful dependent variable first.

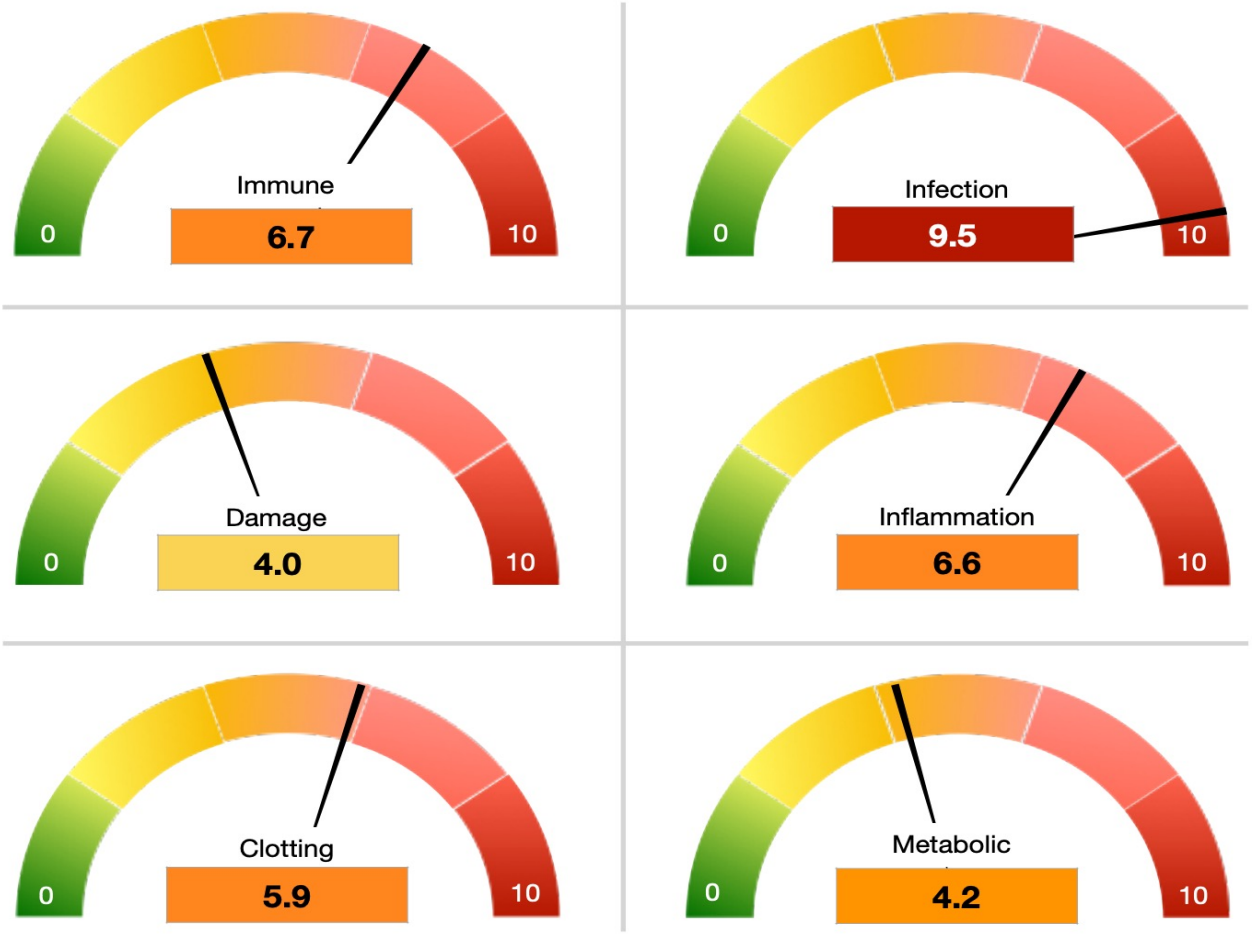
2. Solve independent variables ascribed to each dependent variable.

Cost usually **increases** and effectiveness **decreases** at lower-level dependent variables.

Health – Disease Barometer – Easily Understood Representation



Breakdown into categories of risk



Mechanisms and categories of risk are not the same.

A mechanism may increase risks in several categories.

However, these categories are based on objective biomarker measurement and provide a foundation for understanding the cause/effect relationship between mechanisms and outcomes.

The breakdown into biomarker specificity for diseases

CDT Report	Medium Risk	DATE	2019-01-18	CDT	6.5	Score
Diabetes	Glucose	A1C	Insulin	Triglycerides	Uric Acid	**Diabetes**
Optimal	65 - 80	4 - 5	2 - 6	<100	4 - 6	0 to 10 Scale
Value	**96**	**5.3**	**23.6**	**255**	**6.8**	**4.8**
Heart	WBC	RDW	Neutrophils	CRP	Homocysteine	**Heart**
Optimal	4000 - 6000	< 12.5	2000 - 3500	< 0.6	< 6.3	0 to 10 Scale
Value	**7600**	**13.3**	**5100**	**2.5**	**11.8**	**2.5**
Stroke	CRP	ESR	Fibrinogen	AIP	Insulin	**Stroke**
Optimal	<0.6	< 6.0	150 - 285	< 0.24	2 - 6	0 to 10 Scale
Value	**2.5**	**2**	**342**	**0.90**	**23.6**	**4.3**
Cancer	Insulin	WBC	Neutrophils	NLR	Vitamin D	**Cancer**
Optimal	2 - 6	4000 - 6000	2000 - 3500	< 1.5	55 - 100	0 to 10 Scale
Value	**23.6**	**7600**	**5100**	**3.19**	**16**	**4.2**
Kidney	Uric Acid	GFR-Filtration	BUN/Creat	CRP	Homocysteine	**Kidney**
Optimal	4 - 6	90 - 120	10 - 24	<0.6	<6.3	0 to 10 Scale
Value	**6.8**	**119**	**13**	**2.5**	**11.8**	**2.6**
Brain	Homocysteine	CRP	Neutrophils	WBC	Insulin	**Brain**
Optimal	<6.3	<0.6	2000 - 3500	4000 - 6000	2 - 6	0 to 10 Scale
Value	**11.8**	**2.5**	**5100**	**7600**	**23.6**	**3.6**
Pain	CRP	Vitamin D	Uric Acid	ESR	WBC	**Pain**
Optimal	<0.6	55 - 100	4 - 6	<6	4000 - 6000	0 to 10 Scale
Value	**2.5**	**16**	**6.8**	**2**	**7600**	**3.4**
Respiratory	WBC	Neutrophils	Vitamin D	ESR	CRP	**Respiratory**
Optimal	4000 - 6000	2000 - 3500	55 - 100	< 6.0	< 0.6	0 to 10 Scale
Value	**7600**	**5100**	**16**	**2**	**2.5**	**2.6**
Lipids	Cholesterol	LDL	HDL	Triglycerides	AIP	**Lipids**
Optimal	180 - 240	>100	>50	<100	<0.24	0 to 10 Scale
Value	**142**	**59**	**32**	**255**	**0.90**	**5.1**

What is Your Risk of Sudden or Premature Death?

Understanding Your Labs: Individual lab values are important. MORE important is the story your labs tell about your future health, when taken together.

Optimal Values: We have established science-based optimal biomarker ranges through an exhaustive search of the worldwide medical literature. Our *normal (optimal)* values are those that show no increase in excess early mortality risk – based on sound statistical analysis

Your *Chronic Disease Temperature* (CDT): This single value, displayed at the top of your report, is the combination of excess early mortality risk from many important physiological biomarkers.

Your **CDT** value: 7.5

	Before	After	Change
CDT	7.5	3.5	4.0

Needs Analysis

No one escapes the model!

Top Health Official Dies Suddenly at Age 60

Bernard J. Tyson, the **chairman** and chief executive of **Kaiser** Permanente, the large and influential California health care organization that many view as a model for the rest of the country, **died** on Sunday. He was 60. In a statement, the company said he had unexpectedly **died** in his sleep but gave no other details. Nov 11, 2019

www.nytimes.com › 2019/11/11 › business › bernard-j-tyson-dead

Bernard J. Tyson, Chairman of Health Care Giant, Dies at 60 ...

Other Prominent People Who Died Suddenly

Died Suddenly:

Jimmy Lee

Tim Russert

Dave Goldberg

James Cantalupo

Unexpected Heart Attack:

John Warner

Bob Harper

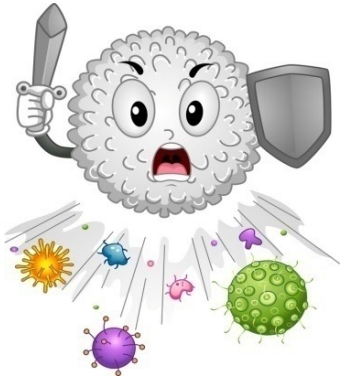
Biomarkers – “Objective Data”

But reference ranges do.

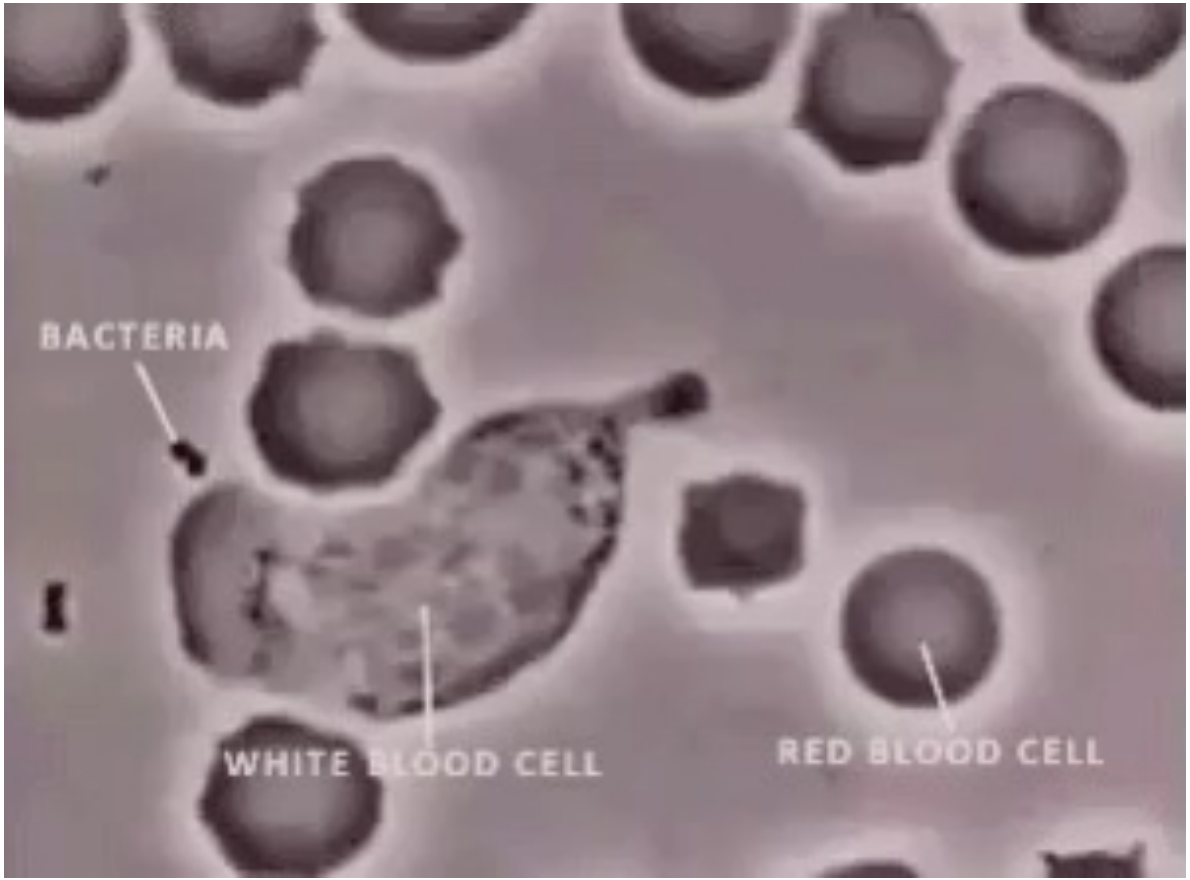
Chronic Risk Markers: Ranking Specificity

1. Search “marker” & “diseases” – PubMed
2. Determine % association to specific diseases
3. Search “allintitle” marker & disease – determine the connection
4. Search for specific and all-cause mortality
5. Tertiles, quartiles, quintiles, deciles
6. Fit to “log-linear” relationship
7. Compare biomarker risks with hazard ratios for mortality
8. Evaluate cost-to-value relationship

CDT Markers: 6. WHITE BLOOD CELLS



White Blood Cells Fight Infection



CDT Markers: WHITE BLOOD CELLS – Early Mortality

Science News

Date: March 25, 2005

Source: Harvard University

Simple Test Predicts Heart Attack Risk: White Blood Cells Sound A New Alarm

Women with more than **6.7** billion white cells per liter of blood had more than **double the risk of fatal heart disease** than women with **4.7** billion cells per liter or A count of 6.7 is considered to be normal, so what is "normal" may have to be redefined."

Standard-of-Care "Normal" **3.5 - 10.8**

Std of Care
3.5 – 10.8

Ideal Value
4.0 – 5.7

Health Revival Partners

CDT Markers: WHITE BLOOD CELLS – Early Mortality

WBC Count and the Risk of Cancer Mortality in a National Sample of U.S. Adults: Results from the Second National Health and Nutrition Examination Survey Mortality Study

Table 2. Risk of cancer mortality by quartile of WBC count

Outcome	WBC quartile (range, 1×10^9 cells/L)			
	Q1 (≤5.7)	Q2 (5.8-6.8)	Q3 (6.9-8.2)	Q4 (≥8.3)
Number at risk, *N*	2061	1829	1922	1862
All cancer, *n*	84	89	113	124
Mortality rate per 100,000	23.4	31.0	39.5	45.9

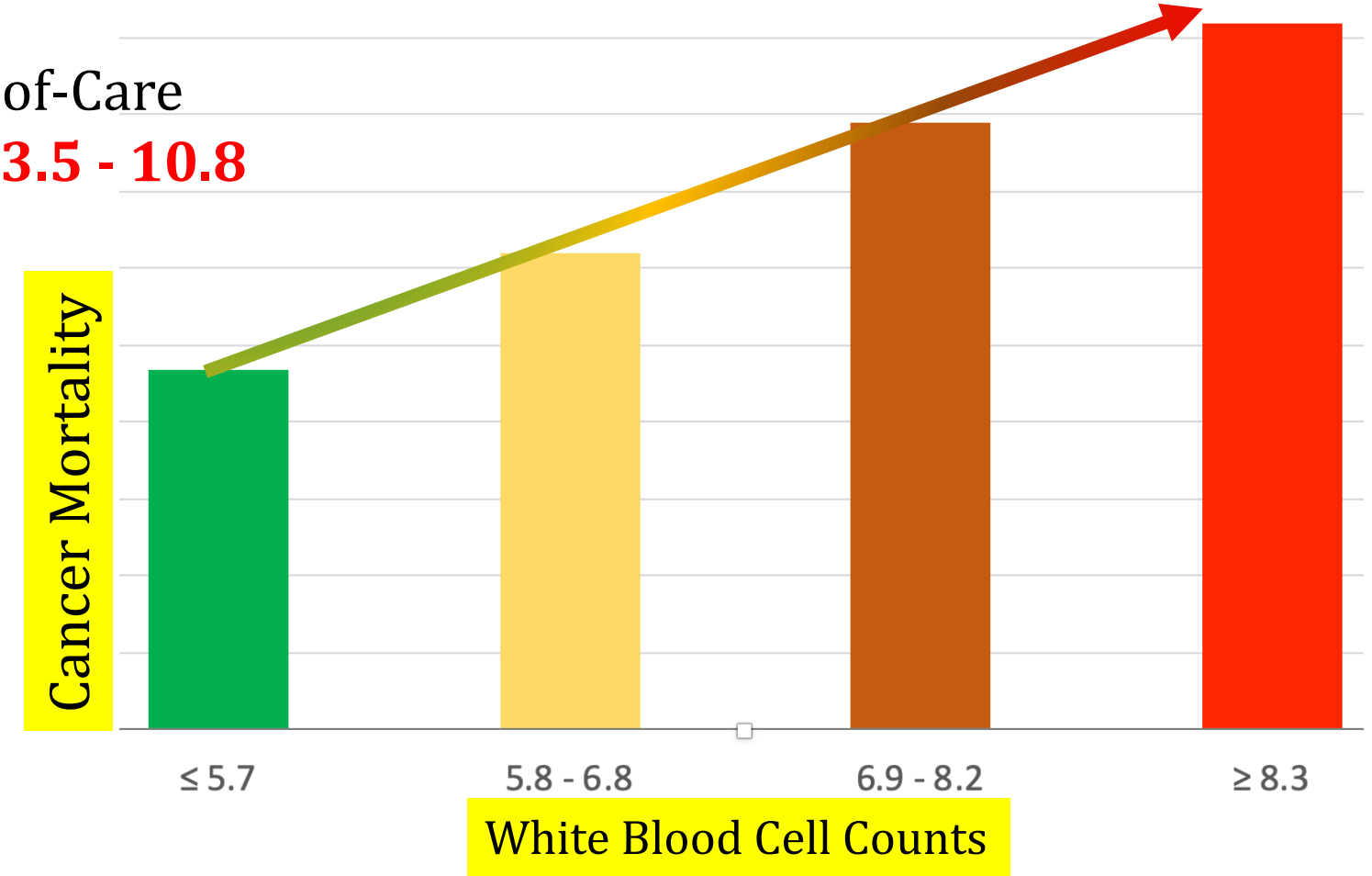
32% increase in Cancer mortality

Ideal Value
4.0 – 5.7

Std of Care
3.5 – 10.8

CDT Markers: WHITE BLOOD CELLS – Early Mortality

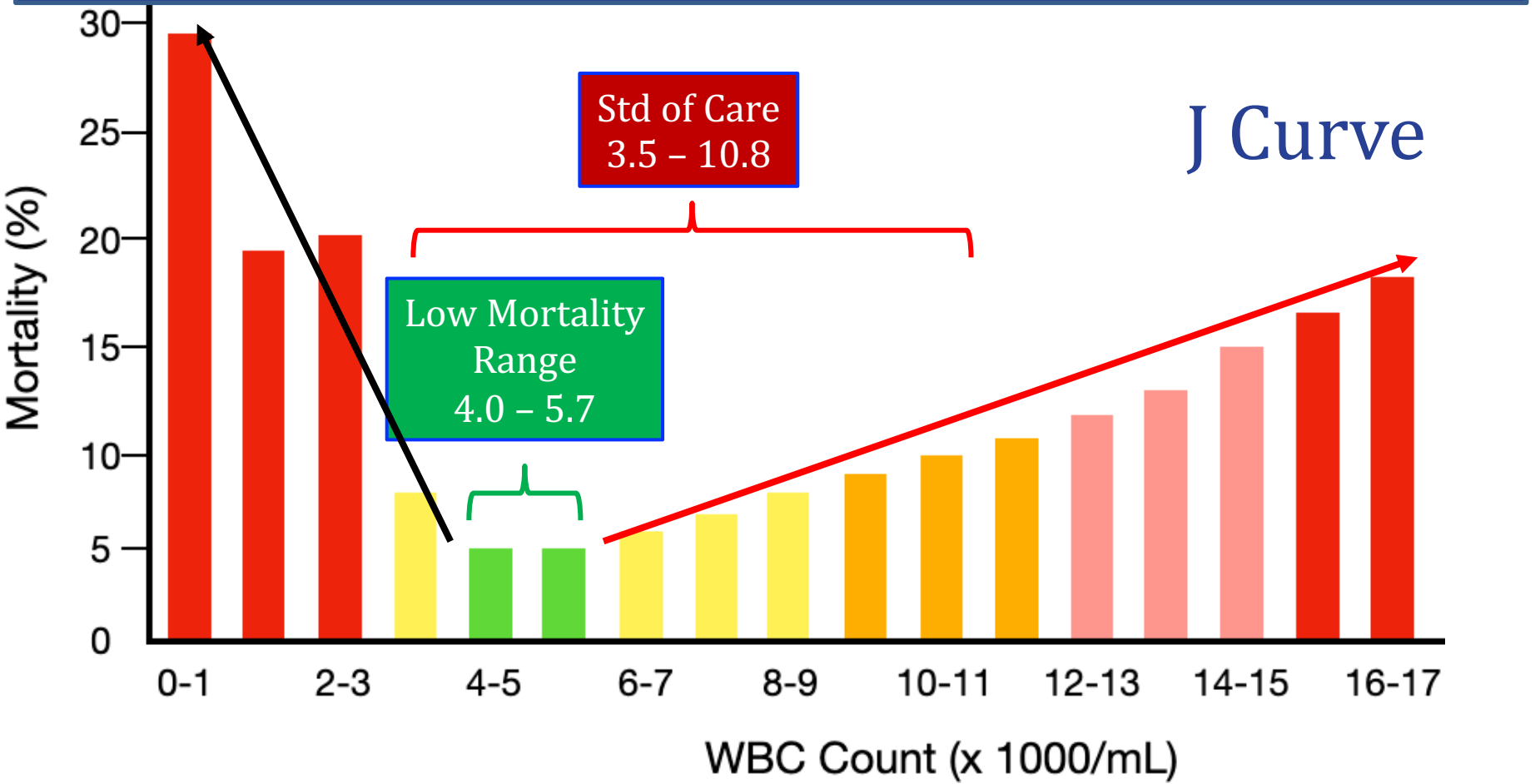
Standard-of-Care
"Normal" **3.5 - 10.8**



Ideal Value
4.0 – 5.7

Std of Care
3.4 – 10.8

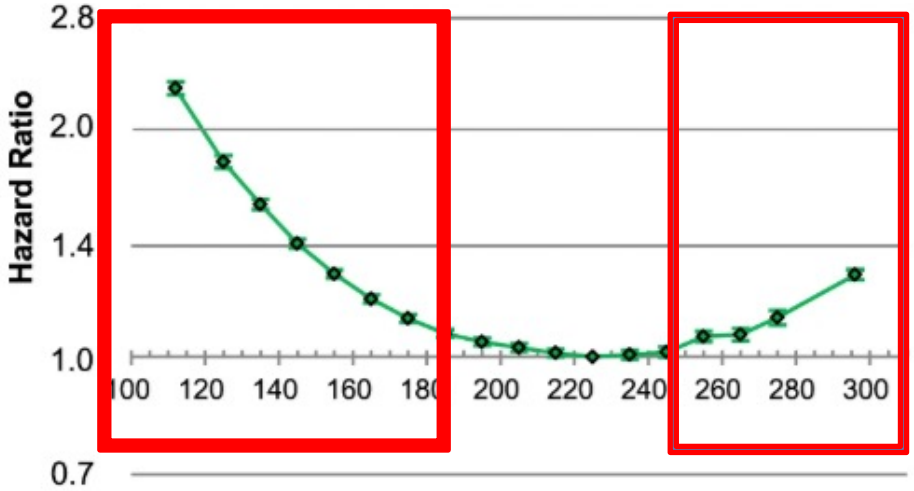
CDT Markers: WHITE BLOOD CELLS – Early Mortality



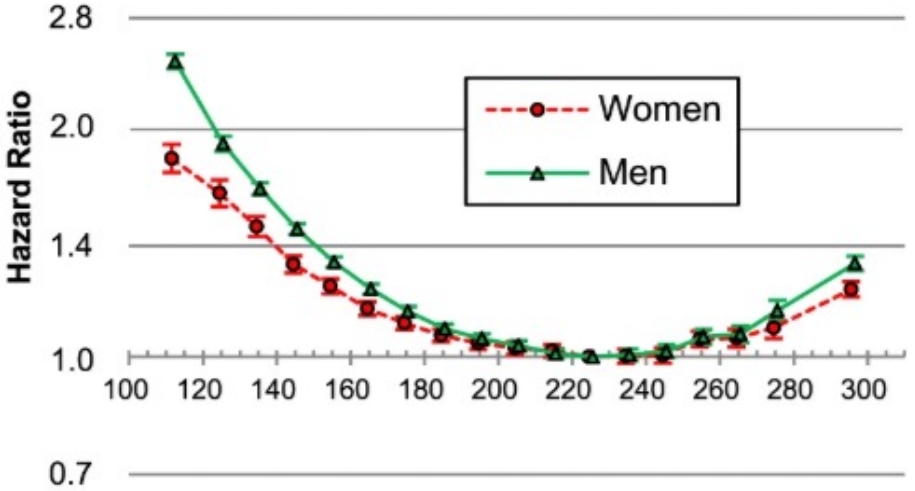
CDT Markers: 20. TOTAL CHOLESTEROL – Early Mortality

From: Total cholesterol and all-cause mortality by sex and age: a prospective cohort study among 12.8 million adults

All participants



Men and women



Very little attention is paid to LOW cholesterol

Std of Care
100 - 199

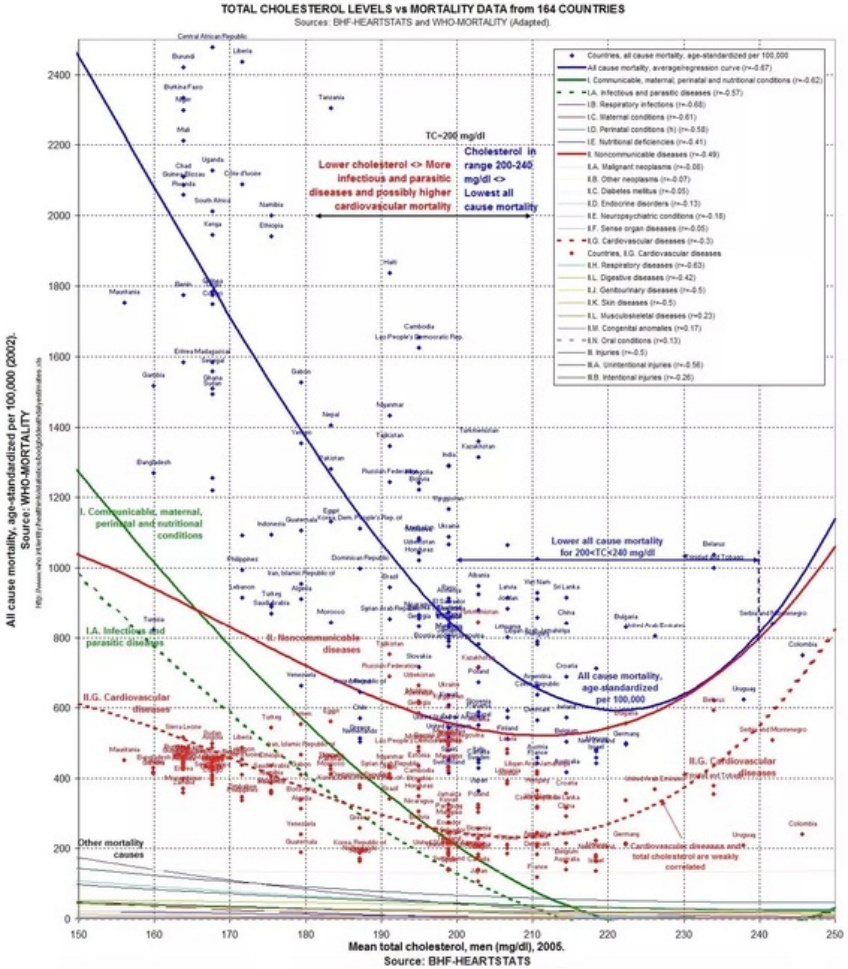
Ideal Value
200 - 250

CDT Markers: 20. TOTAL CHOLESTEROL – Early Mortality

Total Cholesterol Levels
vs
Mortality Data
from
164 Countries

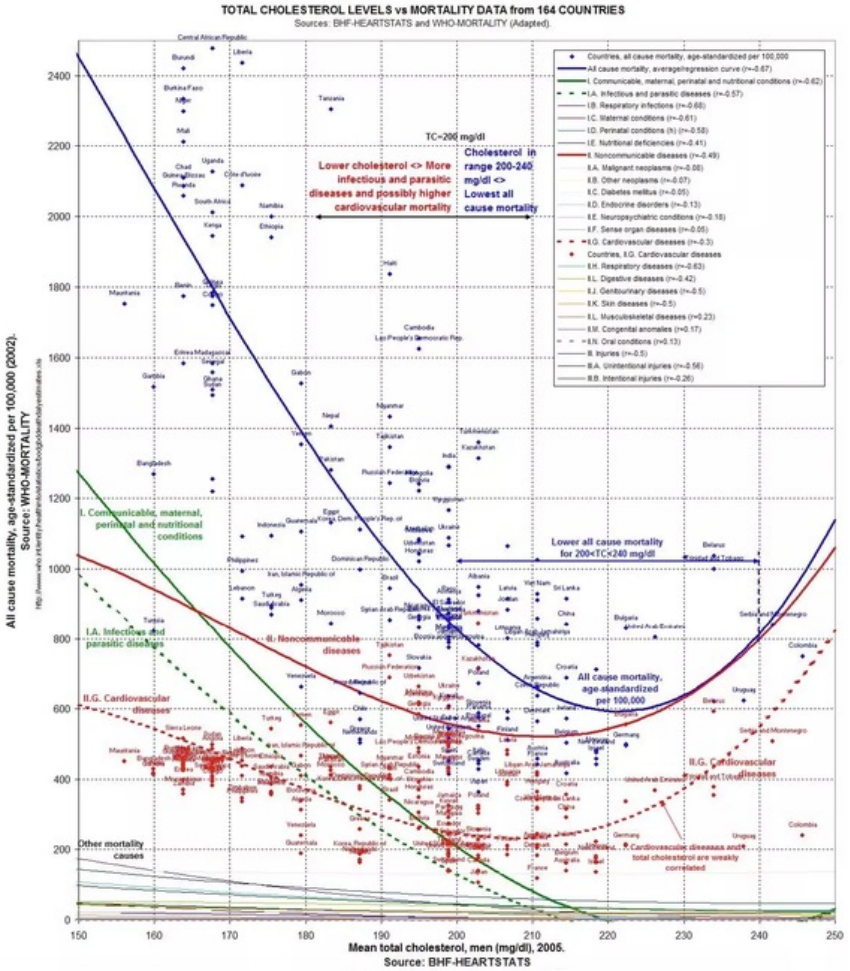
Ideal Value
180 - 250

Std of Care
100 - 199



CDT Markers: 20. TOTAL CHOLESTEROL – Early Mortality

- Countries, all cause mortality, age-standardized per 100,000
- All cause mortality, average/regression curve (r=-0.67)
- I. Communicable, maternal, perinatal and nutritional conditions (r=-0.62)
- I.A. Infectious and parasitic diseases (r=-0.57)
- I.B. Respiratory infections (r=-0.68)
- I.C. Maternal conditions (r=-0.61)
- I.D. Perinatal conditions (h) (r=-0.58)
- I.E. Nutritional deficiencies (r=-0.41)
- II. Noncommunicable diseases (r=-0.49)
- II.A. Malignant neoplasms (r=-0.08)
- II.B. Other neoplasms (r=-0.07)
- II.C. Diabetes mellitus (r=-0.05)
- II.D. Endocrine disorders (r=-0.13)
- II.E. Neuropsychiatric conditions (r=-0.18)
- II.F. Sense organ diseases (r=-0.05)
- II.G. Cardiovascular diseases (r=-0.3)
- Countries, II.G. Cardiovascular diseases
- II.H. Respiratory diseases (r=-0.63)
- II.L. Digestive diseases (r=-0.42)
- II.J. Genitourinary diseases (r=-0.5)
- II.K. Skin diseases (r=-0.5)
- II.L. Musculoskeletal diseases (r=0.23)
- II.M. Congenital anomalies (r=0.17)
- II.N. Oral conditions (r=0.13)
- III. Injuries (r=-0.5)
- III.A. Unintentional injuries (r=-0.56)
- III.B. Intentional injuries (r=-0.26)



CDT Markers: LDL – Low Density Lipoprotein

When 'Bad' Cholesterol Gets Too Low, Stroke Risk May Rise

- People who had an LDL of 50 to 69 had a **65 percent higher risk of hemorrhagic stroke**.
- For people with an **LDL below 50, the risk nearly tripled**.

Neurology®

The most widely read and highly cited peer-reviewed neurology journal

Home Latest Articles Current Issue Past Issues Residents & Fellows

Ideal Value
120 - 170

Std of Care
0 - 99

E July 30, 2019; 93 (5) ARTICLE

Low-density lipoprotein cholesterol and risk of intracerebral hemorrhage

Heart Disease Strikes Back Across the U.S., Even in Healthy Places

Middle-aged people are increasingly dying from heart disease in cities across the country—including exercise-mad Colorado

Change from 2010-11 to 2015-16 in the rate per 100,000 people

Percentage taking cholesterol drugs

Cardiovascular

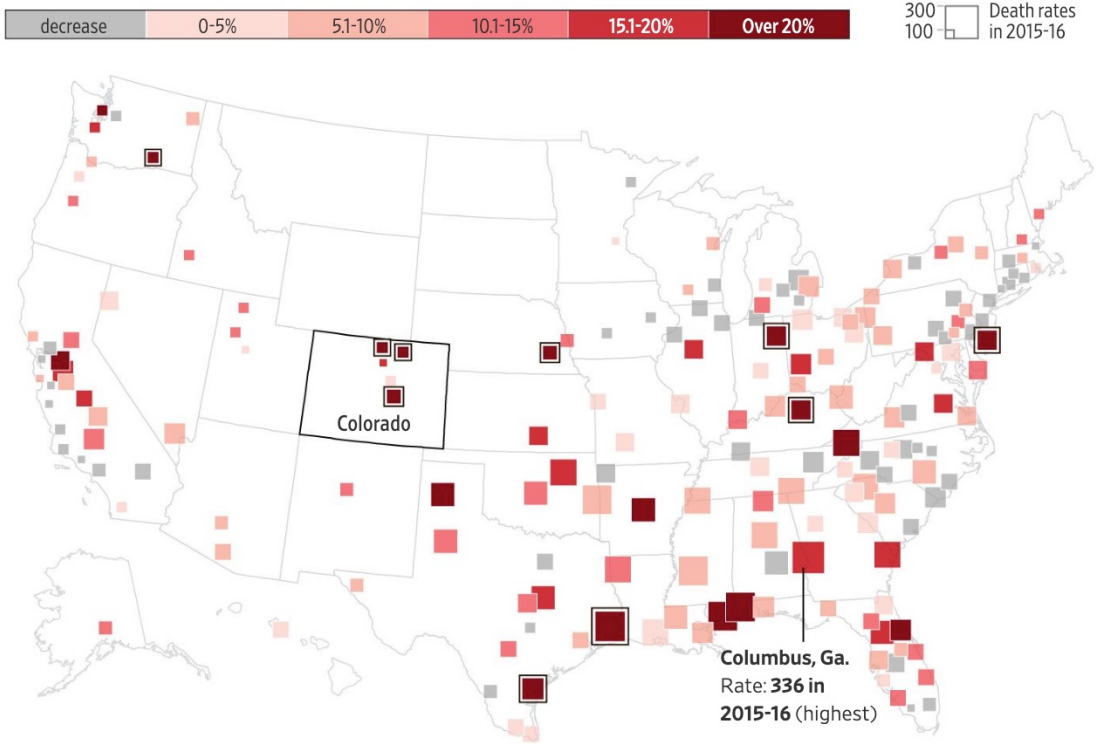
Death RATE

U.S. total

up 4.3%

Deaths from cardiovascular disease for ages 45-64 in major metro areas

Change from 2010-11 to 2015-16 in the rate per 100,000 people

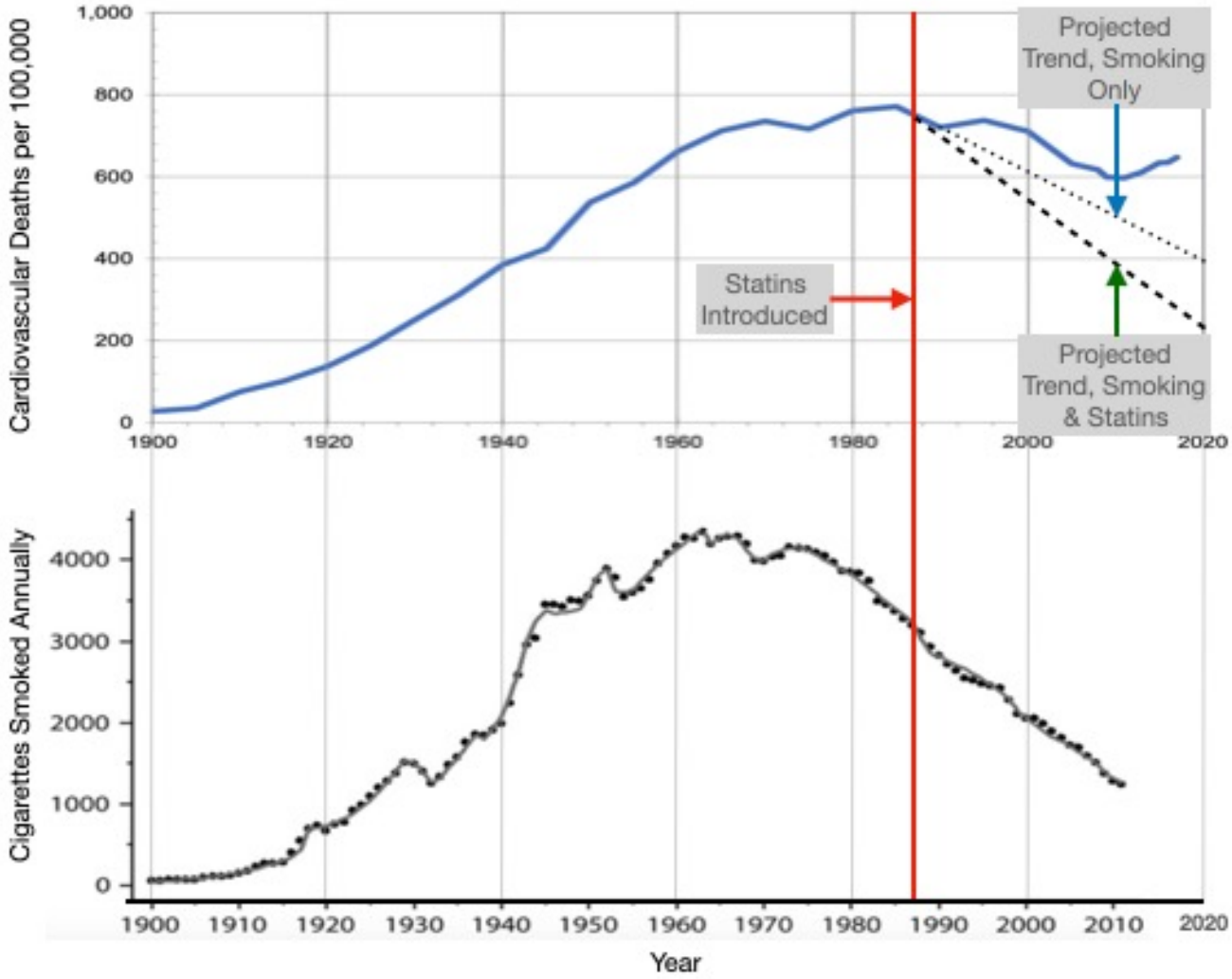


Metro areas with the largest rate increases

1. Lexington, Ky.	27.9%	**6.** Beaumont, Texas	24.1
2. Atlantic City, N.J.	25.7	**7.** Fort Wayne, Ind.	23.9
3. Corpus Christi, Texas	25.7	**8. Greeley, Colo.**	23.5
4. Lincoln, Neb.	25.1	**9. Colo. Springs, Colo.**	23.3
5. Fort Collins, Colo.	24.4	**10.** Kennewick, Wash.	22.5

Increases by area type

Major metros	2.9%
Midsize metros	8.1
Small metros	9.9
Rural areas	9.3
U.S. total	4.3


Cardiovascular Deaths per 100,000
1,000
800
600
400
200
0
1900
1920
1940
1960
1980
2000
2020
Projected Trend, Smoking Only
Statins Introduced
Projected Trend, Smoking & Statins
Cigarettes Smoked Annually
4000
3000
2000
1000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year

CDT Markers: Predicting Cancer Risk - 1

Morrison *et al. BMC Cancer* (2016) 16:80
DOI 10.1186/s12885-016-2115-6

BMC Cancer

RESEARCH ARTICLE Open Access

Inflammatory biomarker score and cancer: A population-based prospective cohort study

Leavitt Morrison[1], Jari A. Laukkanen[2,3], Kimmo Ronkainen[2], Sudhir Kurl[2], Jussi Kauhanen[2] and Adetunji T. Toriola[1*]

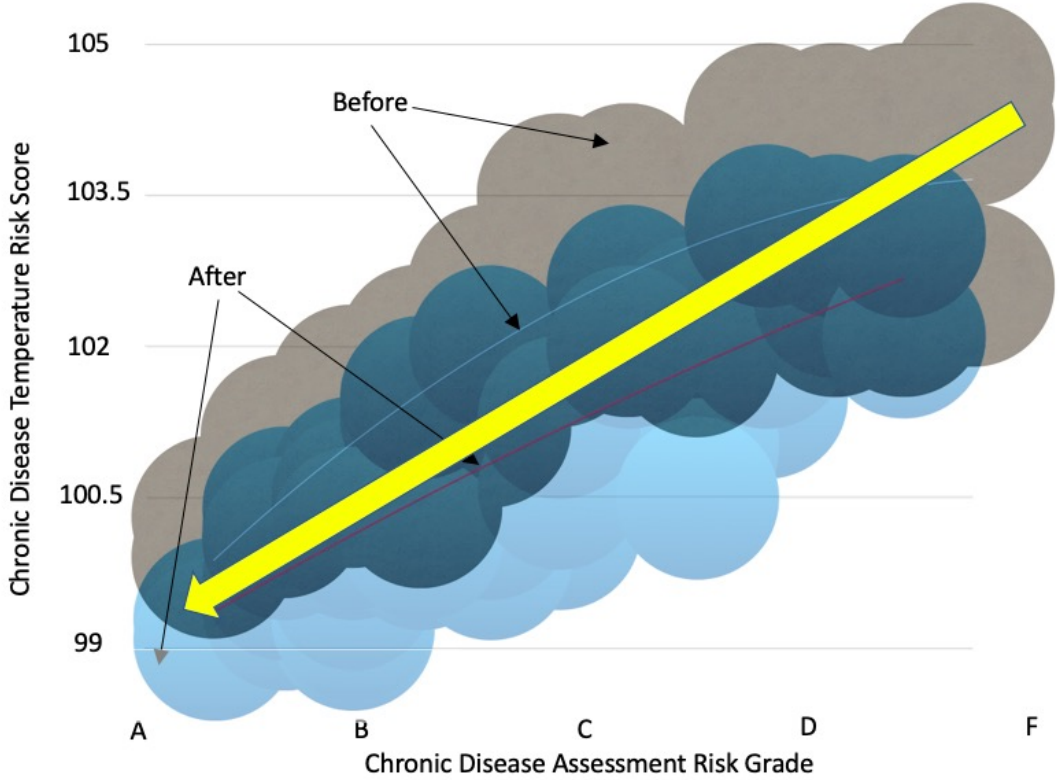
Abstract

Background: Inflammation is associated with cancer but there are conflicting reports on associations of biomarkers of inflammation with cancer risk and mortality. We investigated the associations of C-reactive protein (CRP) and leukocyte count with cancer risk and mortality using individual biomarkers, and an inflammatory score derived from both biomarkers.

Peer-Reviewed

Reduction in Chronic Disease Risk and Burden in a 70-Individual Cohort Through Modification of Health Behaviors

Thomas J. Lewis • Jason H. Huang • Clement Trempe



Take-home lesson:

1. Biomarkers measure
2. Reversing risks solve

Silent pre-existing processes determine outcomes

Emerging Infectious Diseases and Diagnosis Journal

Review Article

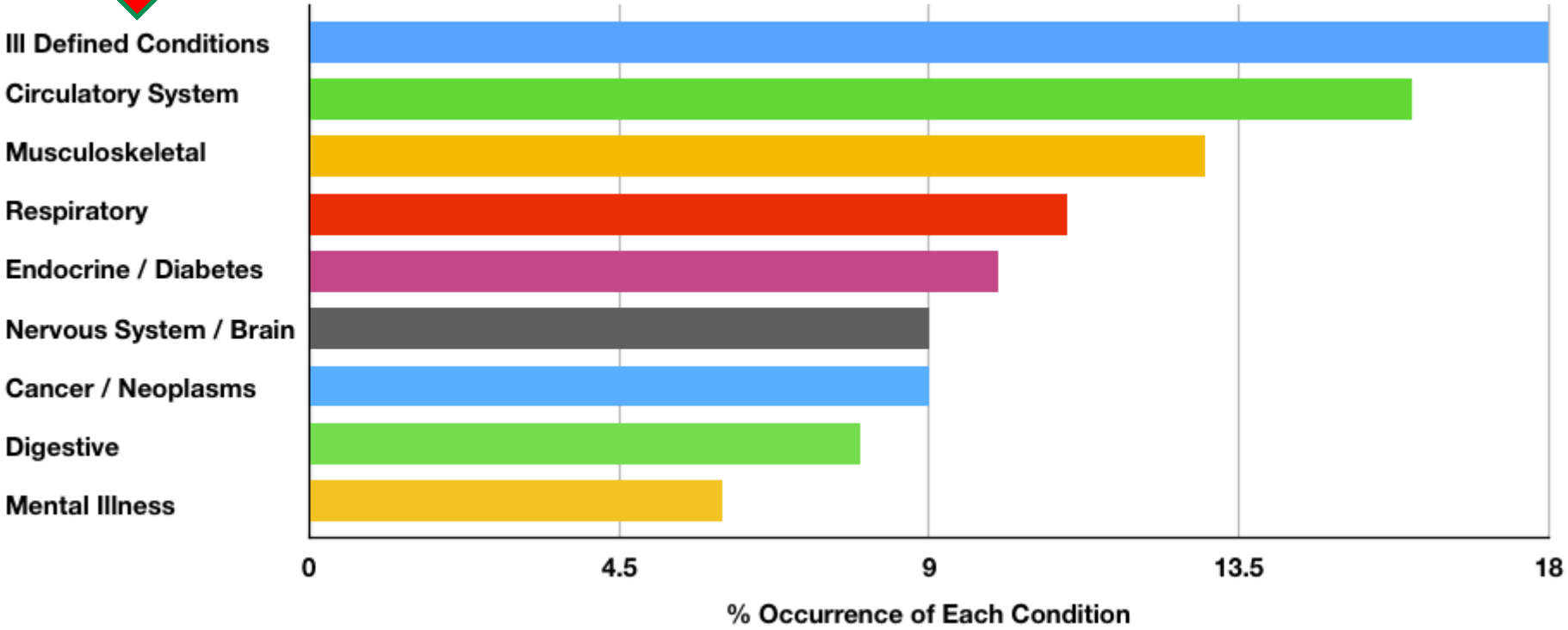
Lewis TJ, et al. Emerg Infect Dis Diag J: EIDDJ-100020

The Cytokine Storm and Pre-Cytokine Storm Status in COVID-19-A Model for Managing Population Risk for Pandemics and Chronic Diseases

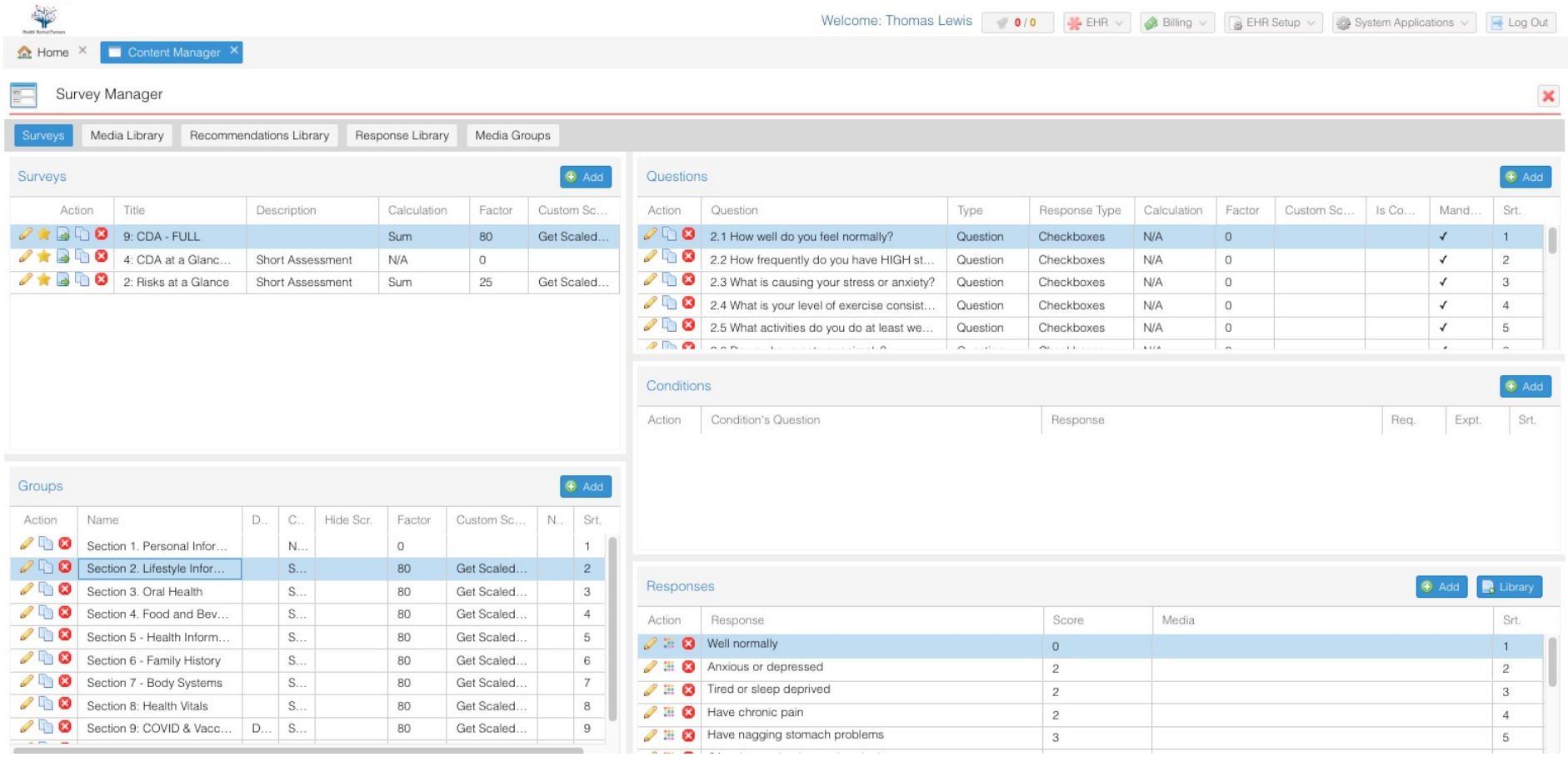
Lewis TJ[1*], Austin T[2], Carter ML[3], Lokensgard TJ[4], Lewis J[1],MinenkoIA[5],Seberger PJ[6] and Artamonov M[7]

[1]Health Revival Partners, Talbott, TN; GoMD, San Diego, CA, USA

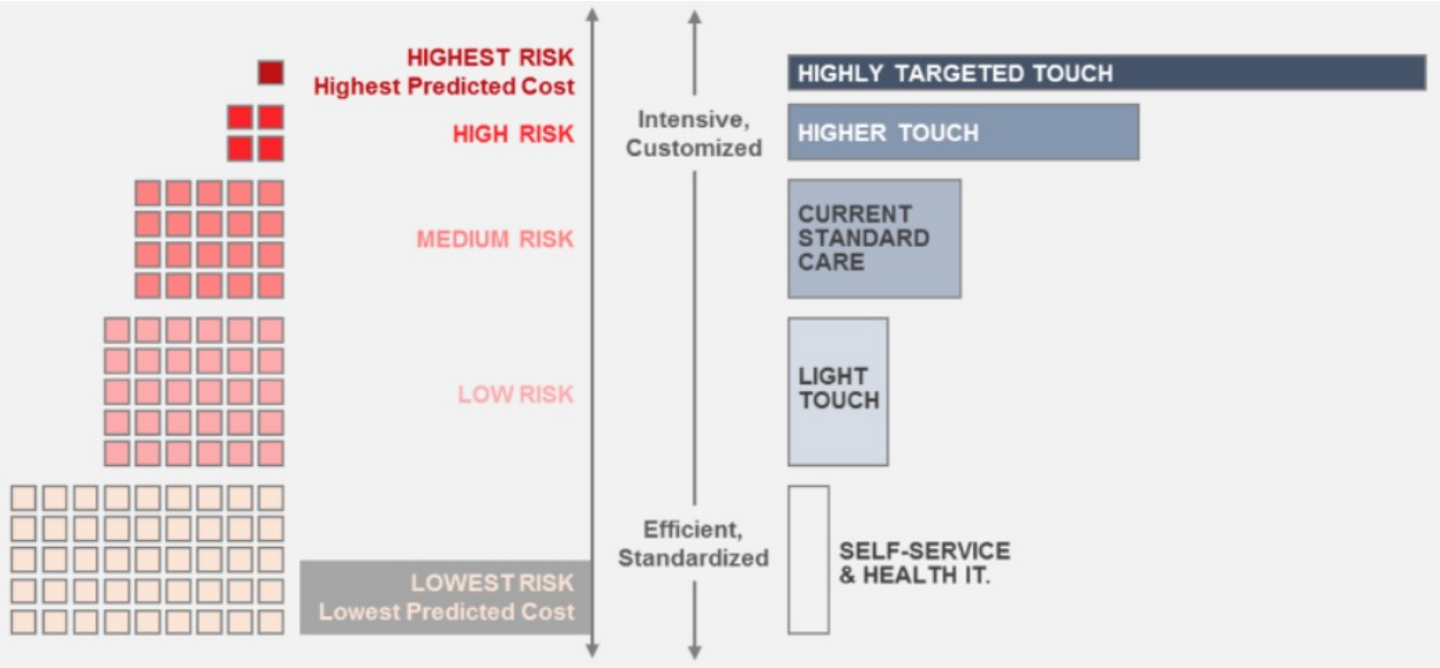
Iatrogenic Death – 3rd on typical lists



Our “MI” – Driven Solutions Platform



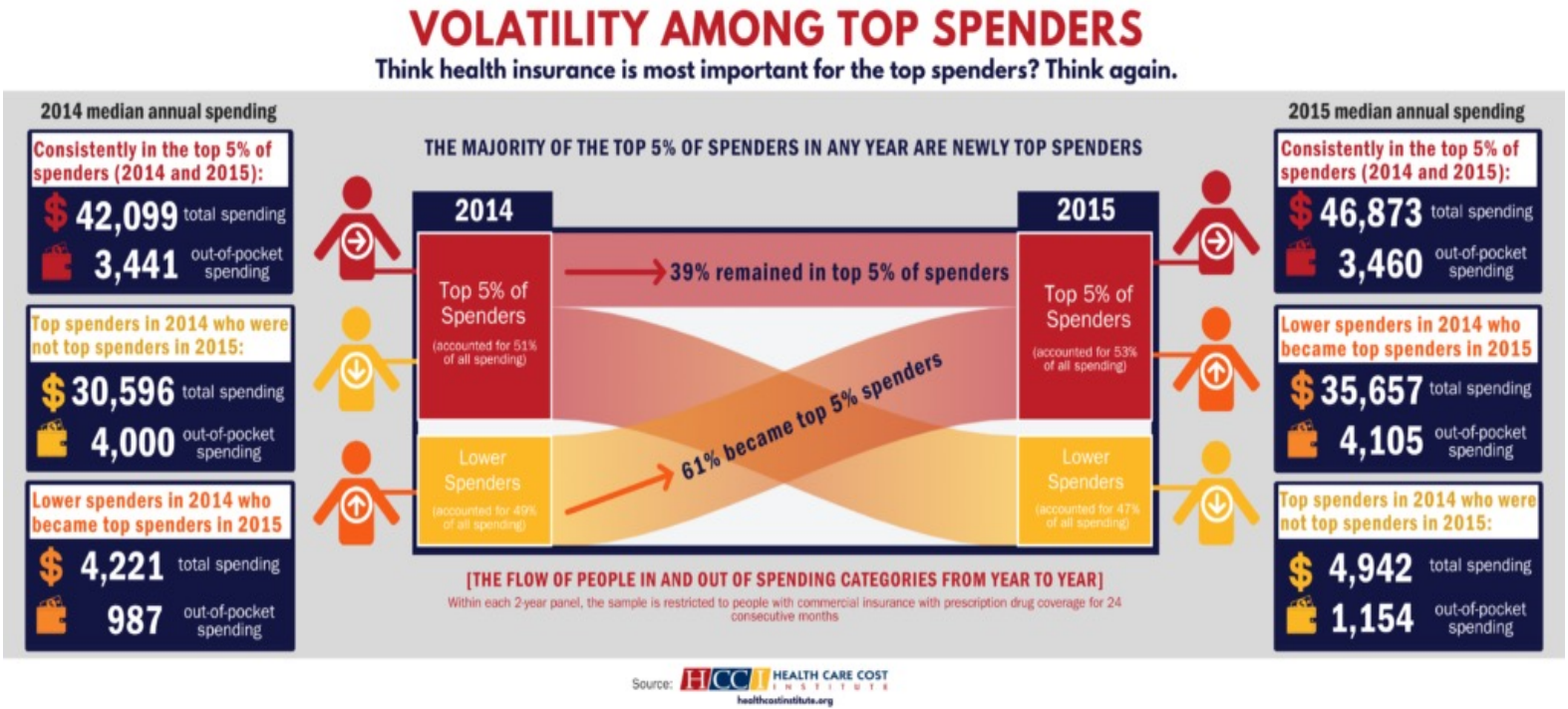
Care Across the Continuum: A Scaled Approach Matching Resource Intensity To Patient Need



NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

Your New Health Care System
As Amended by Supreme Court, June 28, 2012
President
IRS
Congress
PCORI
Secretary
Health & Human Services
Essential Health Benefits Package
Government Health Benefit Exchanges
IPAB
CMS
Medicare
Physicians
Patients
New Government
Expanded Government
Private
New Relationships

NEJM Catalyst

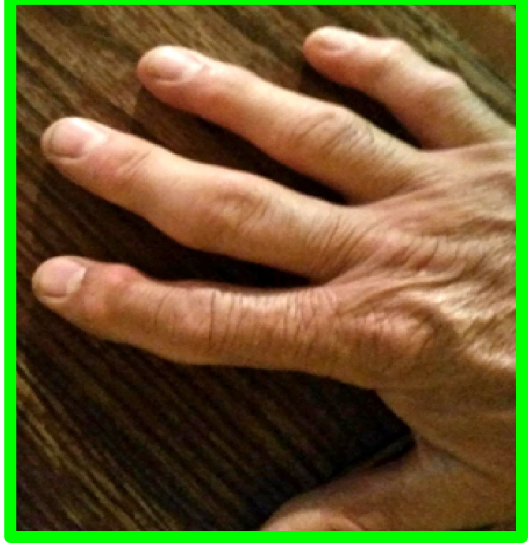


61% of Low Spenders Suddenly Become **HIGH** Spenders

Before
Cancer Risk
After

Before
Metabolic Risk
After

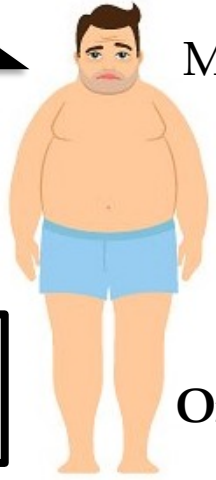
Before
Cardiovascular Risk
After

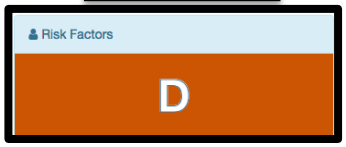


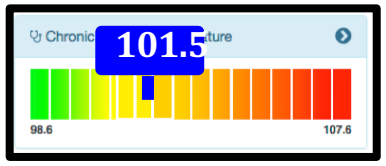
A1C 8.8
Type II
Diabetes

12
Months HRP

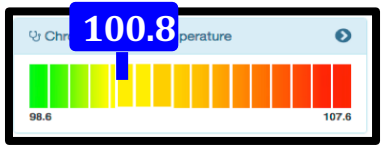
A1C 5.5
Below
Prediabetes







Off ALL Meds



Health Revival Partners

MI, algorithms, & protocols developed by scientists and practicing doctors