



Overdiagnosed

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Objectives

- * Describe the problem of changing disease definitions
- * Describe patient-centered approaches to medical gambling
- * Describe how to separate serious disease decisions from non-serious ones

Overdiagnosed

MAKING PEOPLE SICK IN THE PURSUIT OF HEALTH

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Illustration

- * GERD
- * Osteoarthritis with Achilles tendinitis
- * Hyperlipidemia
- * Asthma
- * Mild cognitive impairment
- * Obsessive-compulsive disorder
- * Benign prostatic hypertrophy



Sicker Than Ever?

- * Chronic Conditions
 - * Before WWII -57%
 - * Baby boomers - 63%
- * 1999 – 2002
 - * Life expectancy - increased 0.4 years
 - * Healthy life expectancy - decreased 1.2 years

A Story

- * Veterans Administration study in the early 1960s
- * Diastolic BP of 119 - 129
- * RCT of 140 patients, 1.5 years
- * $NNT = 1.4$

Outcome	No Treatment (Control)	Treatment (Intervention)
Death	4	0
Stroke	4	1
Heart failure	4	0
Heart attack	2	0
Kidney failure	3	0
Eye hemorrhage	7	0
Hospitalized for high blood pressure	3	0
Treatment complication	0	1
Total	27	2

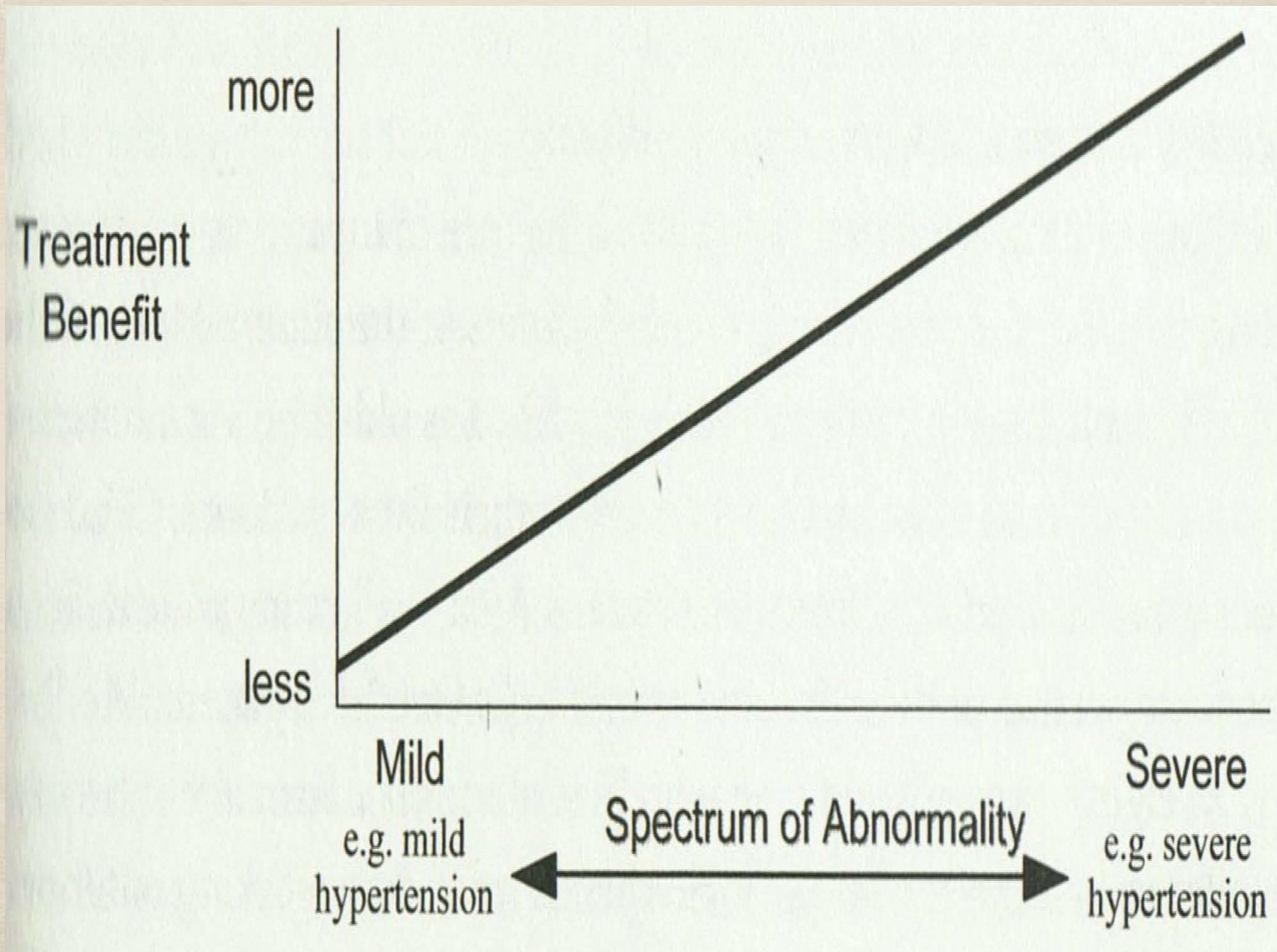
What About Lower BP?

Degree of Hypertension	Five-year Risk of Bad Event		Chance of Benefit	Number Needed to Treat
	No Treatment	Treatment		
Severe [Diastolic BP 115–129]	80%	8%	72%	1.4
Moderate ¹⁰ [Diastolic BP 105–114]	38%	12%	26%	4
Mild [Diastolic BP 90–104]	32%	23%	9%	11
Very Mild ¹¹ [Diastolic BP 90–100]	9%	3%	6%	18 ¹²

“Prehypertension”

4 RCTs – JAMA

Bottom Line

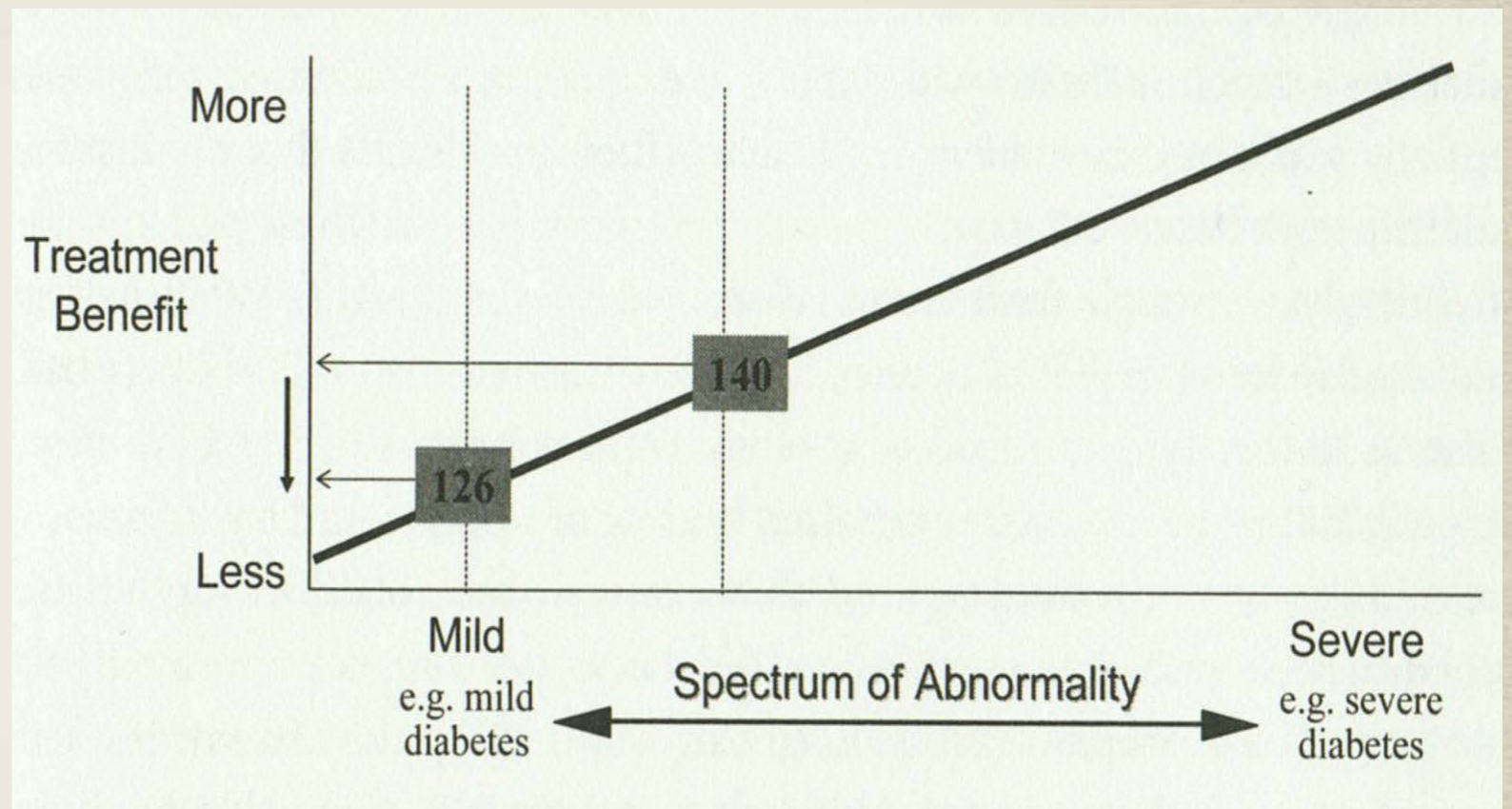


Giving People Diseases

- * Hypertension - Prehypertension
- * Diabetes - Prediabetes
- * High cholesterol
- * Osteoporosis
- * Alzheimer's – Mild Cognitive Impairment

Giving People Diabetes

- * 1997 – Changed the definition
- * Fasting BS went from 140 to 126
- * NHLBI study – increased deaths in treatment group

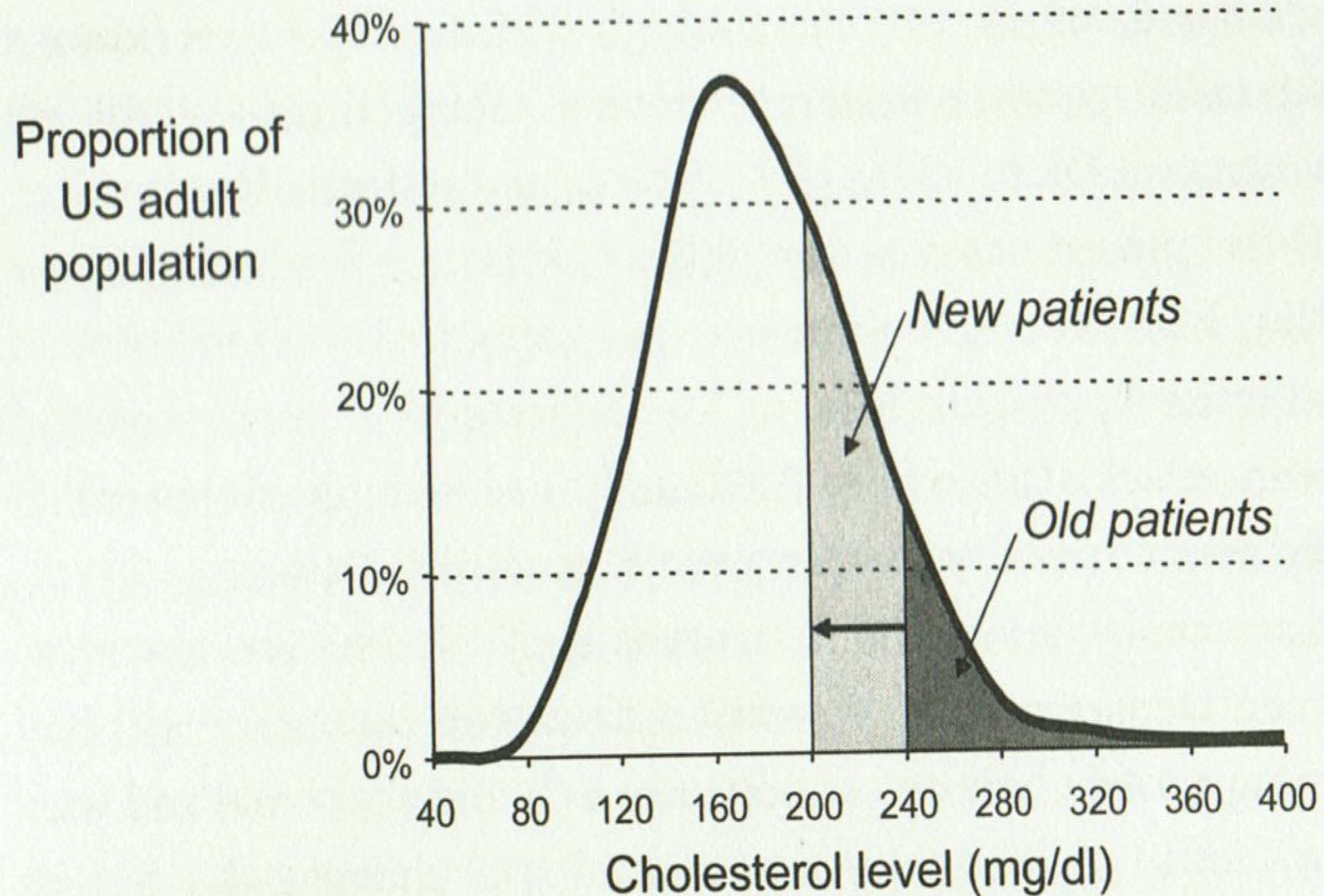


“We were unable to find the precise cause of the increased risk of death”

Treating Cholesterol

- * Harrison's 8th Edition - reserve treatment for over 300!
- * 1990s - 240
- * 1998 - AF/CAPS - 2% absolute risk reduction - lowered to 200
- * 42,000,000 "new" patients with "high" cholesterol

Changed Definition



What About Osteoporosis?

- * Bone mineral density (BMD) testing
 - * Arbitrary definition of -2.5 (compared to young women)
 - * Arbitrary because risk rises each point below 0
- * 2003 - National Osteoporosis Foundation advocated changing definition to -2.0
- * Created 6,700,000 "new" patients

Lower Diagnostic Thresholds

Condition	Disease Prevalence		New Cases	Increase
	Change in Threshold	Old Definition		
Diabetes				
Fasting sugar 140 → 126	11,697,000	13,378,000	1,681,000	14%
Hypertension				
Systolic BP 160 → 140	38,690,000	52,180,000	13,490,000	35%
Diastolic BP 100 → 90				
Hyperlipidemia				
Total cholesterol 240 → 200	49,480,000	92,127,000	42,647,000	86%
Osteoporosis in women				
T score -2.5 → -2.0	8,010,000	14,791,000	6,781,000	85%

Why Does This Happen?

- * Well-meaning, but misguided specialists
 - * Most funded by the pharmaceutical industry
- * Advocacy groups
 - * Most funded by the pharmaceutical industry
- * "Value" of doing something

Solutions?

- * No one with drug company/device manufacturer connection on guideline panels
- * Primary care directed panels
 - * Limit specialists on panels
 - * Specialists can report, but not write (like NIH Consensus Conferences)
- * Government funding only

Imaging To Create Disease

- * CT study of college students with colds
 - * 87% of college students with uncomplicated colds have sinusitis on CT
- * MRI study of people's backs
- * "Depends on what you look at, obviously. But even more it depends on the way that you see." [Bruce Cockburn](#)

Massive Inflation

- * CT Scans
 - * 1980 - 3,000,000
 - * 2006 - 62,000,000
- * Since 1990
 - * Head CTs – doubled
 - * Abdominal CTs - tripled
 - * Chest CTs - fivefold increase
 - * MRIs - four to tenfold increase

What's Normal?

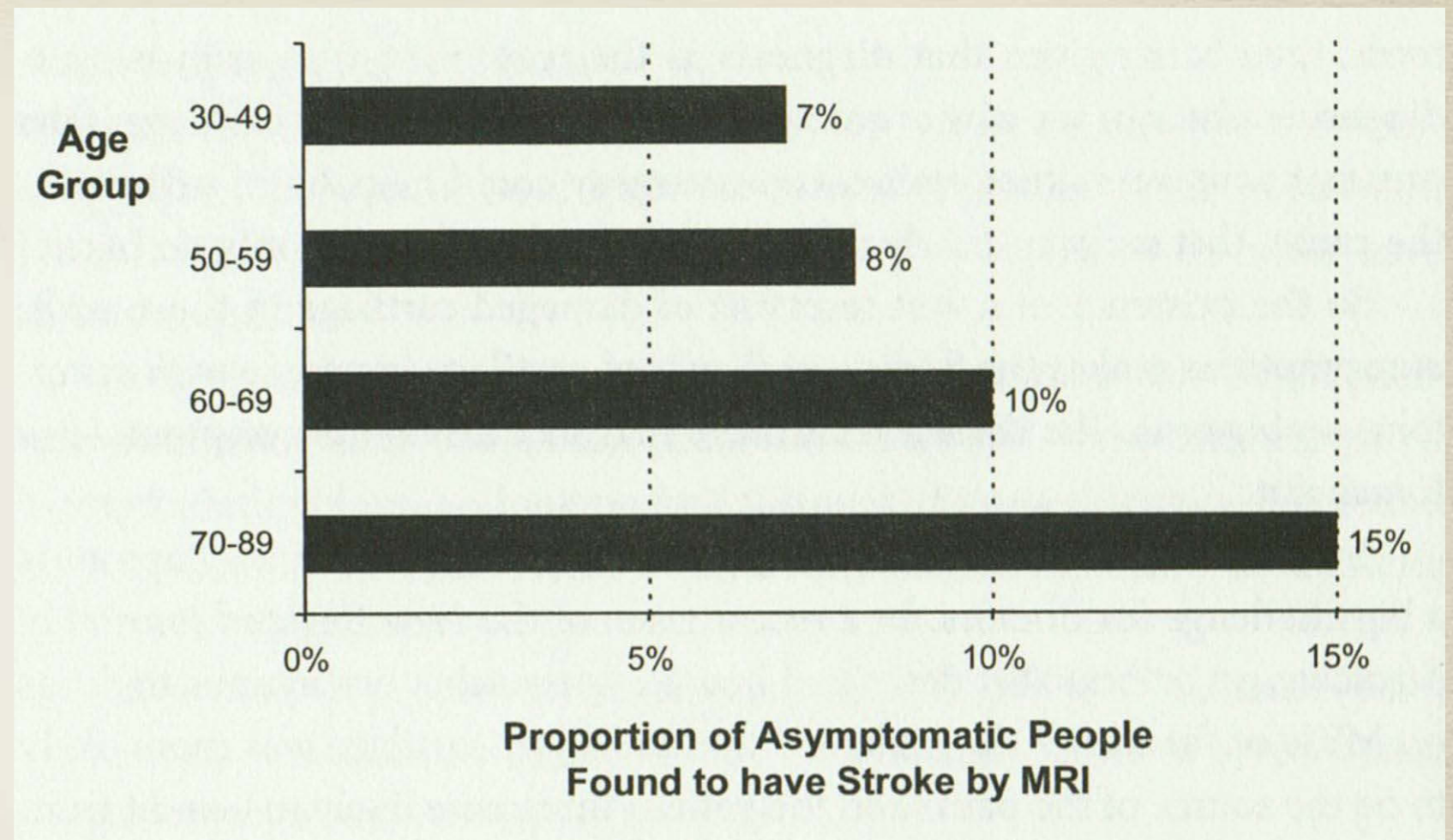
- * In asymptomatic people:
 - * 10% have gallstones on ultrasound
 - * 40% have meniscal injury on MRI
 - * 50% of people below 50, and 80% of those over 50, have bulging disks on MRI

Silent Strokes

Total body CT

* 86% have an abnormality

* Ave. 2.8 abn/person



Vascular Screening

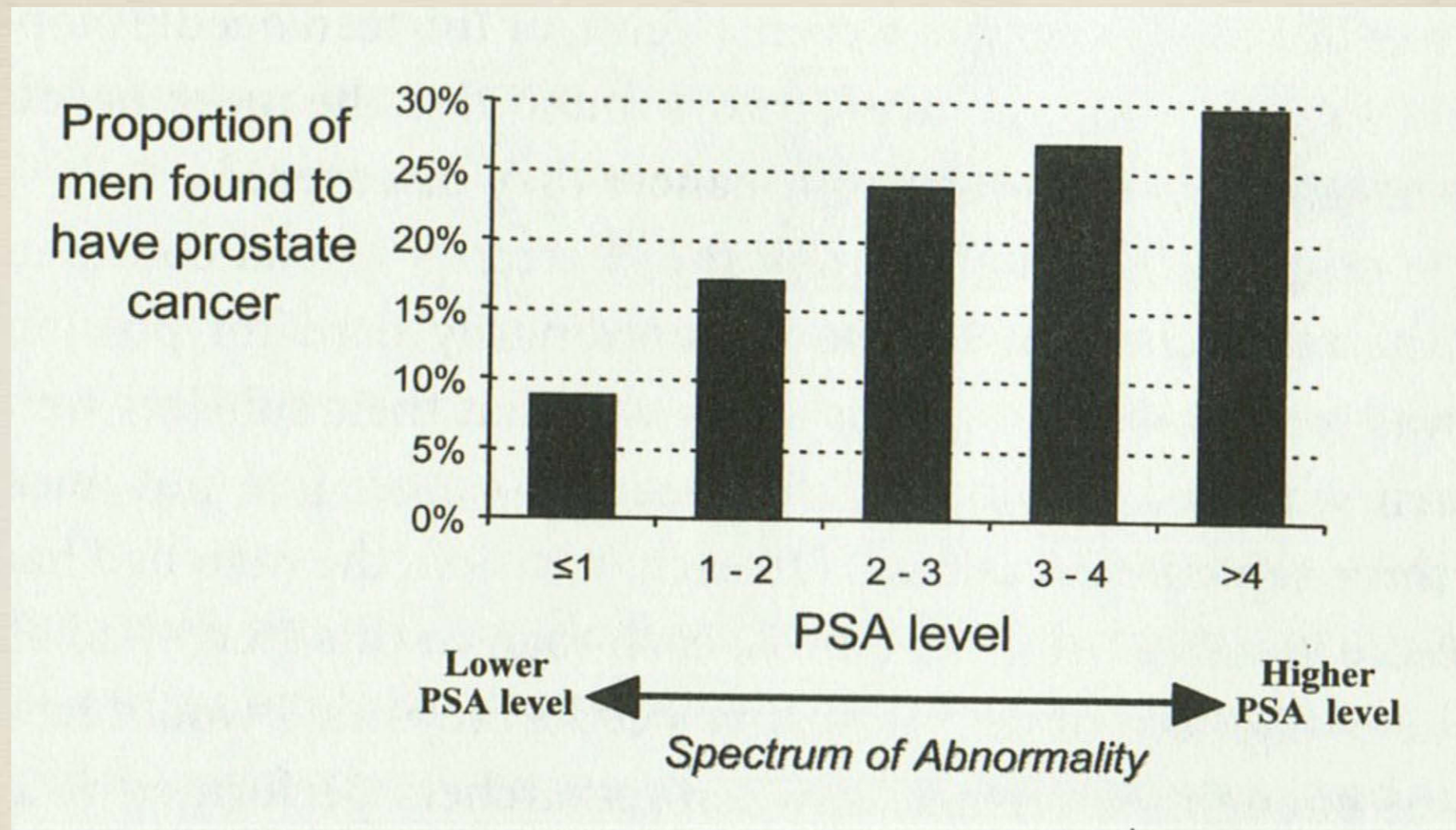
Abnormality (Setting)	Prevalence of Abnormality Using		Increase with Scanning Technology
	Clinical Exam	Scanning Technology	
Abdominal Aortic Aneurysm (201 high-risk men)	2.5%	9% (abdominal ultrasound)	3.6-fold
Blood Clots in Leg (349 trauma patients)	1%	58% (duplex ultrasound)	58-fold
Blood Clots in Lung (44 patients with clots in leg)	16%	52% (ventilation-perfusion scan)	3.3-fold
		70% (spiral CT scan)	4.4-fold

So what are the risks of this?

Risky Screening

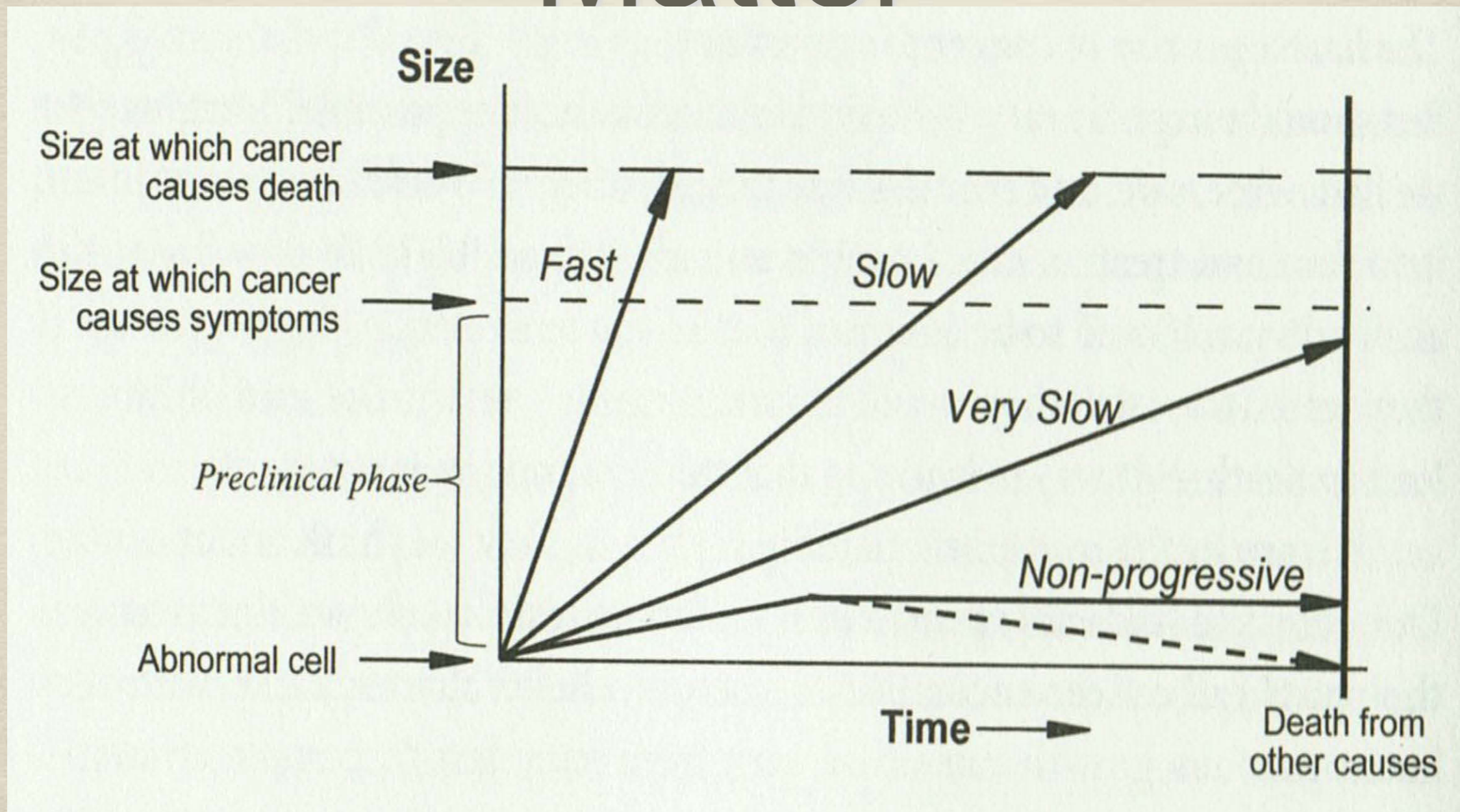
- * Prostate screening
- * Thyroid cancer
- * Melanoma
- * Lung Cancer
- * Mammograms in young women
- * Routine fetal monitoring

Prostate Screening



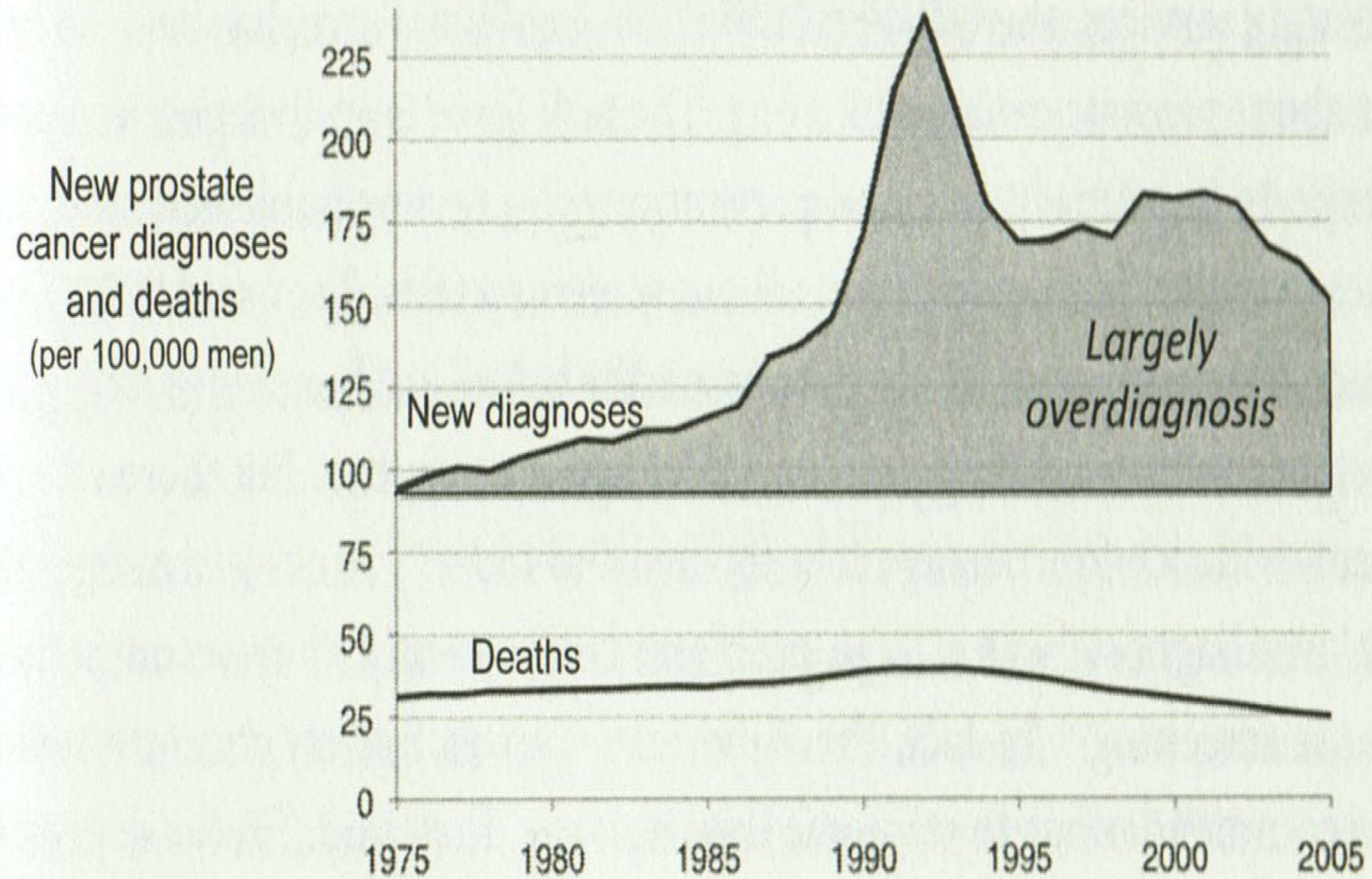
Over half of older men have prostate cancer – but less than 3% die from it

Some Cancers Don't Matter



Screening can't distinguish these - and misses the worst ones!

Reducing Deaths?



Why Does This Matter?

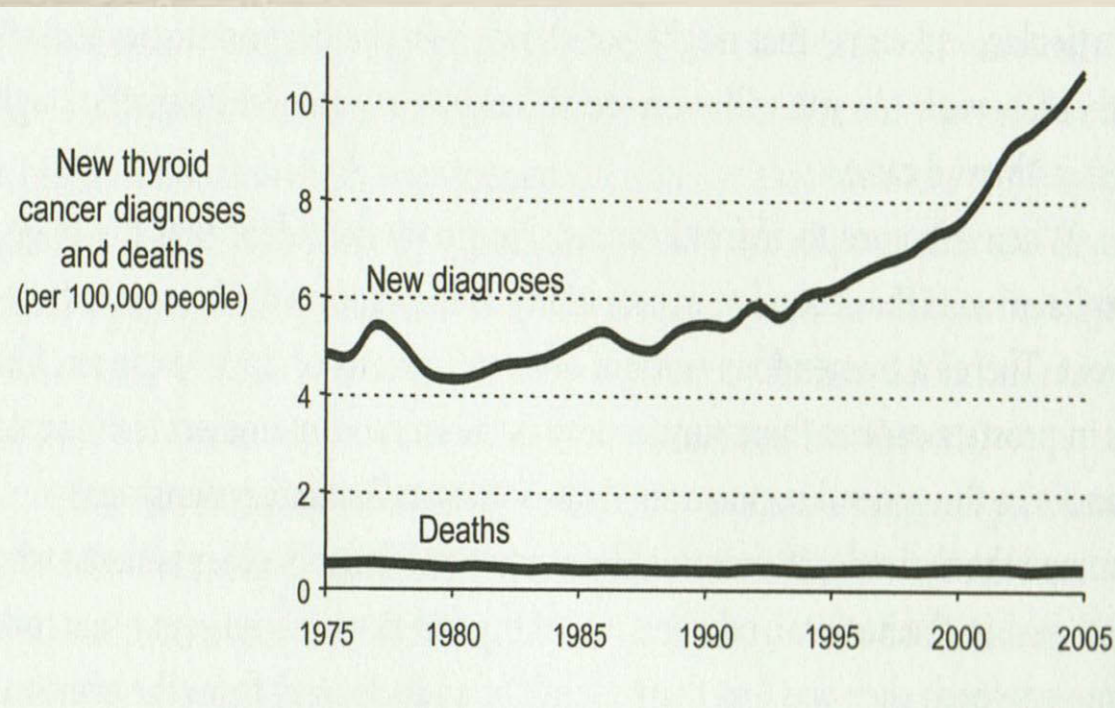
- * Surgery complications
 - * 50% erectile dysfunction
 - * 30% incontinence
 - * 0.1 to 0.2% mortality rate
- * Radiation complications
 - * 15% defecation problems
 - * Impotence and incontinence - less but still happens

The New York Times

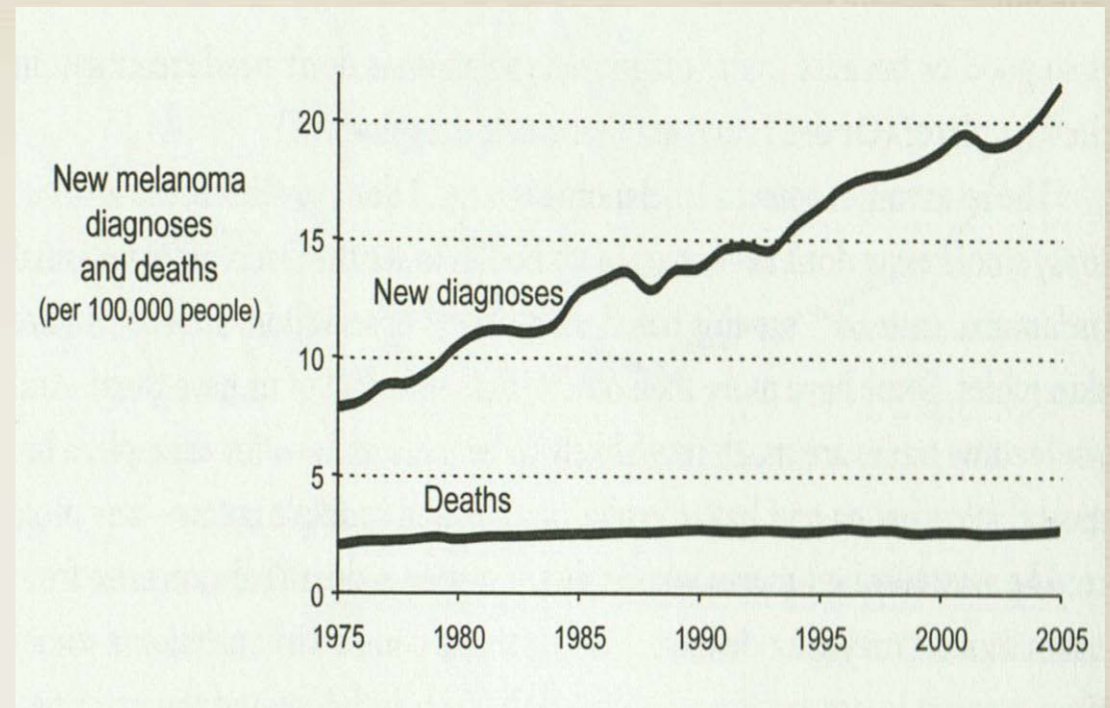
- * The Great Prostate Mistake - PSA testing
 - * "...the test is hardly more effective than a coin flip"
 - * "...can't distinguish between the two types of cancer - the one that will kill you and the one that won't."
 - * "...a profit-driven, public health disaster"
- * Richard Ablin, discoverer of PSA test

Ablin, The New York Times, March 9, 2010

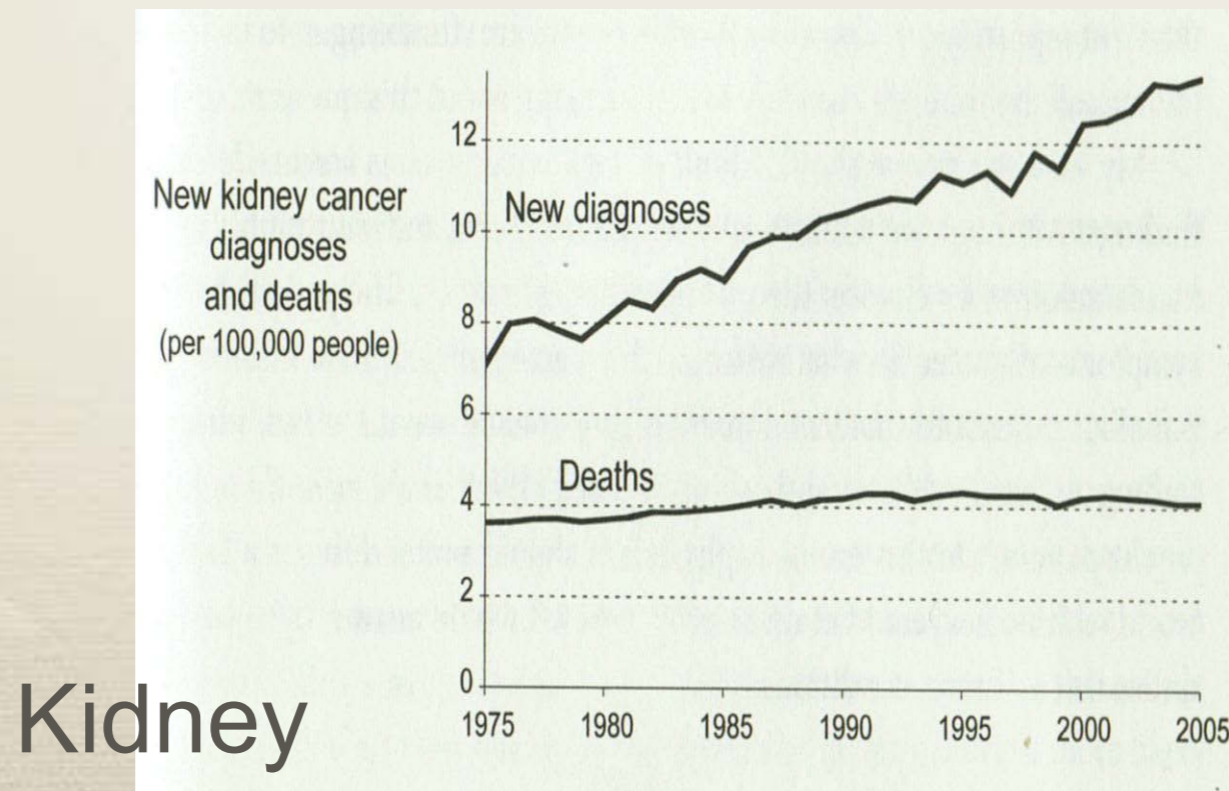
Cancers Overdiagnosed?



Thyroid



Melanoma



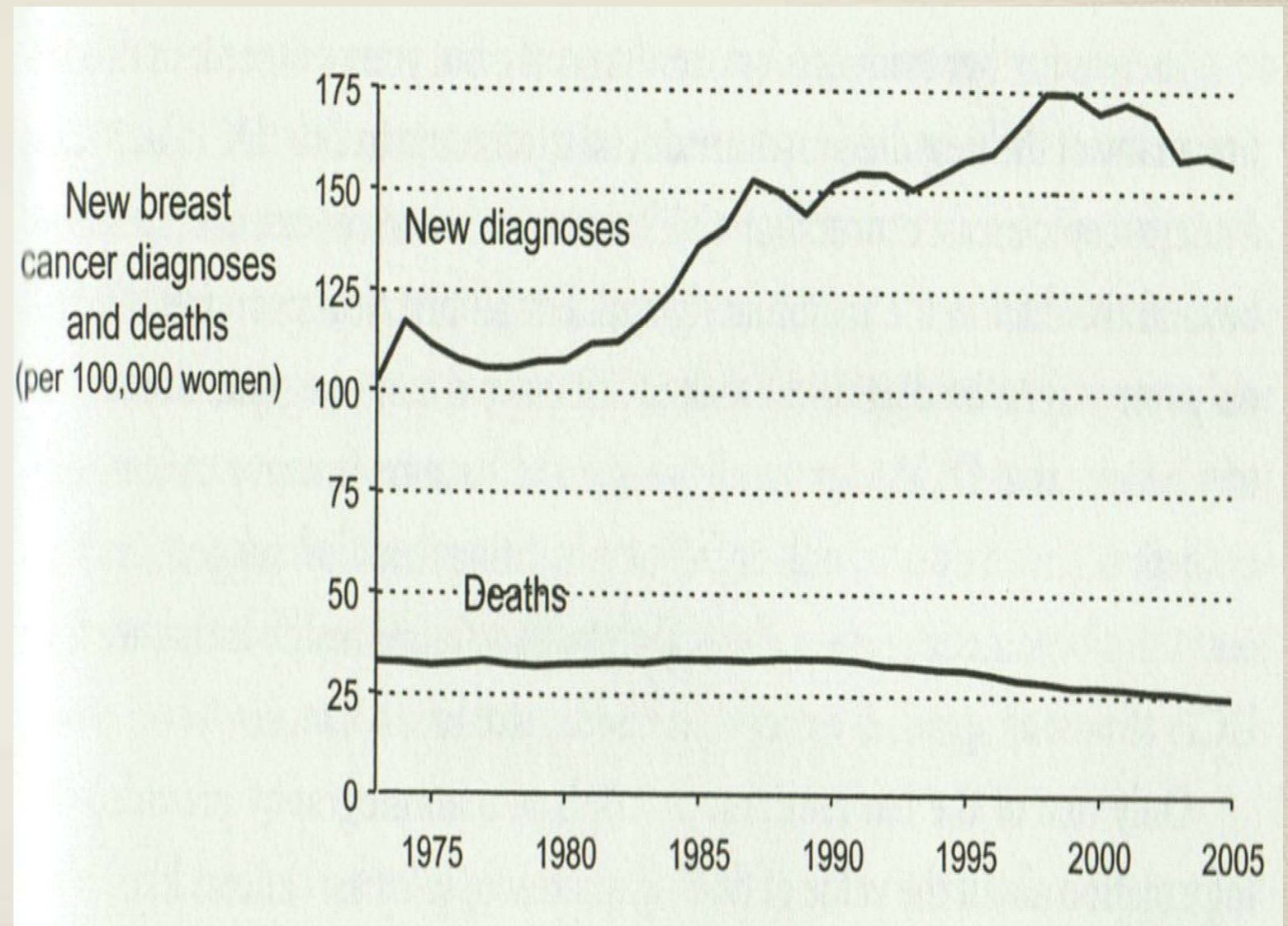
Kidney

Incidentalomas

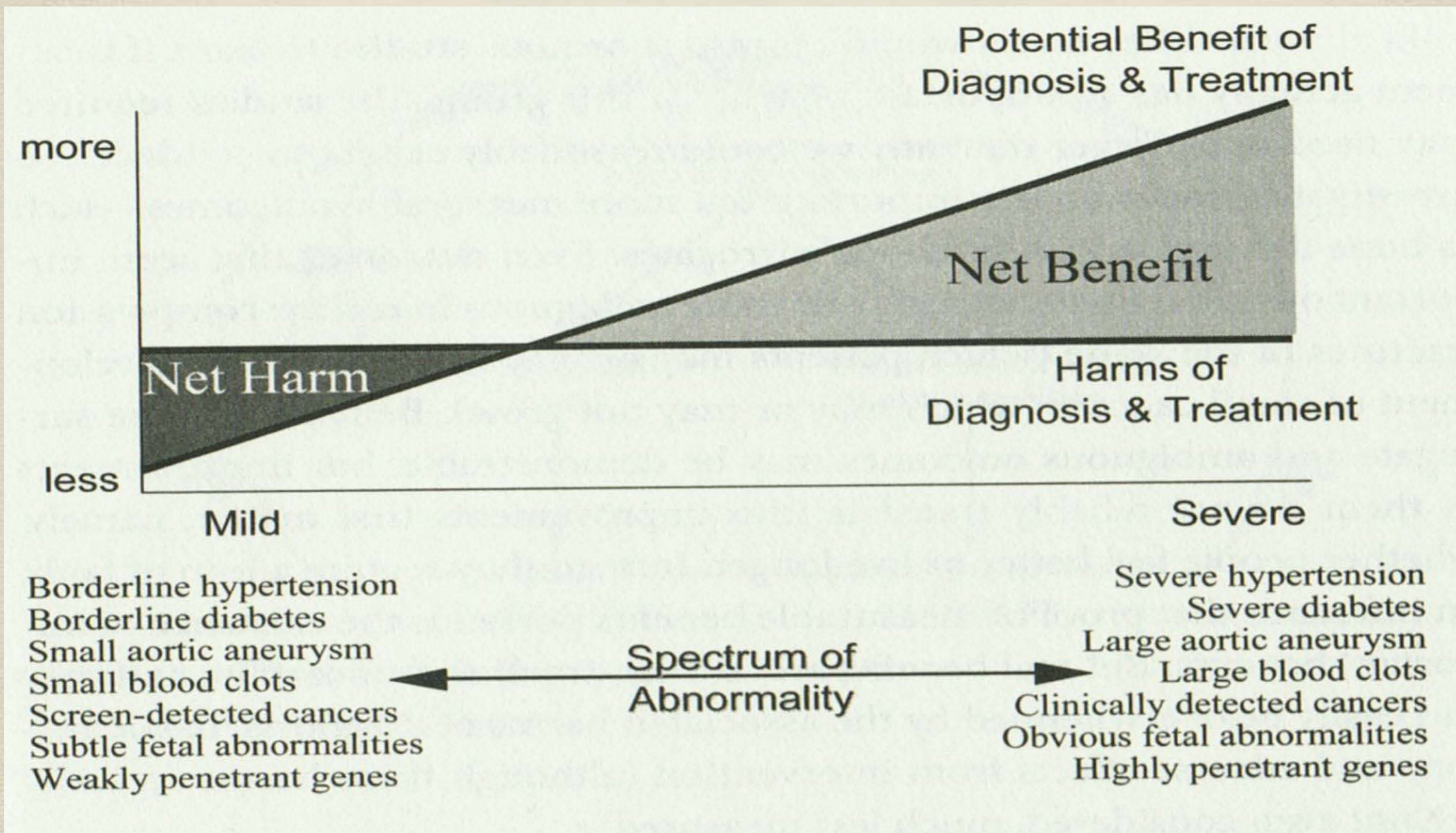
Organ	Proportion of People with an Incidentaloma on CT scan (a)	Ten-year Risk of Cancer Death (b)	Chance That the Incidentaloma Is a Lethal Cancer [highest possible] (c = b/a)	Chance That the Incidentaloma Is Not a Lethal Cancer (d = 1 - c)
Lung (smokers)	50%	1.8%	3.6%	96.4%
Lung (never-smokers)	15%	0.1%	0.7%	99.3%
Kidney	23%	0.05%	0.2%	99.8%
Liver	15%	0.08%	0.5%	99.5%
Thyroid (by ultrasound)	67%	0.005%	<0.01%	>99.99%

Effective Screening

- * Cervical cancer
- * Colon cancer
- * Breast cancer?



Is Medicine Worthless?



How do you want to gamble?

The Horizon

[Medscape Cardiology](#)

The Cost of Giving Statins to Almost All of Us

Henry R. Black, MD, 1/17/12

Universal Screening and Drug Treatment of Dyslipidemia in Children and Adolescents

Bruce M. Psaty, Frederick P. Rivara, *JAMA*. 2012;307:257-258.

Effectiveness and Cost-Effectiveness of Blood Pressure Screening in Adolescents in the United States

[Journal of Pediatrics](#) - [Volume 158, Issue 2](#) (February 2011)

Fecal Occult Blood Tests Can Do More Harm Than Good in the Elderly

Kistler CE, *Arch Intern Med* 2011;171:1344-1357

Gambles

- * Pursue Health – focus on feeling well, use only proven methods to reduce risk, minimize contact with medical system unless unwell, accept slightly higher chances of disease, disability or death to minimize overdiagnosis, medicalization, and overtreatment
- * Pursue Disease – do everything possible to reduce risk of death or disability, accept risk of being diagnosed, experiencing side effects or medical errors

Final Point

- * No right answer
- * But there is a right process – involve the patient
- * They are very likely to gamble differently than you do