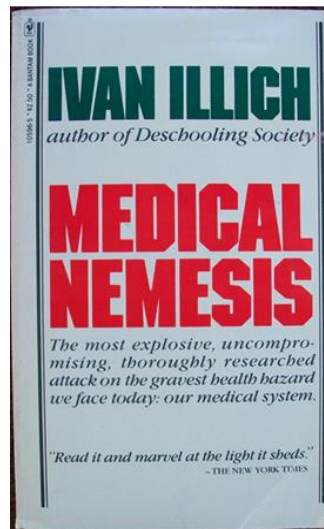
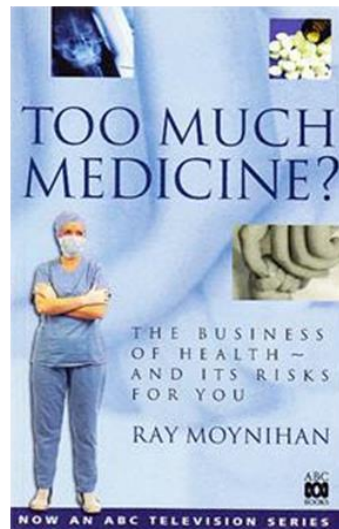


Overdiagnosis: the rising epidemic of the 21st Century

Professor Paul Glasziou
Bond University Paul_Glasziou@bond.edu.au



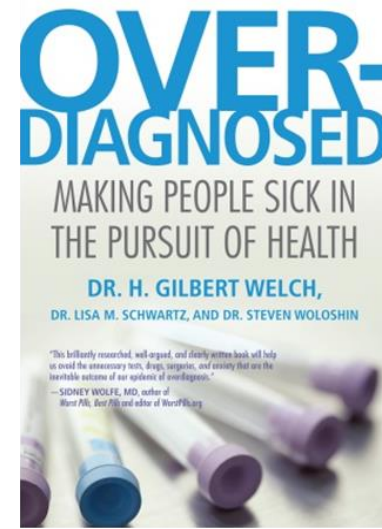
1976



1998



2002



2012

Some Proposals for EBHC's future

1. Don't skip **step 0**: foster doubt, uncertainty and honesty
2. **Beware over-diagnosis: overdetection & overdefinition**
3. Take **non-drug interventions** as seriously as pharmaceuticals
4. It's the patients decision: teach **Shared Decision Making** alongside Evidence-Based Medicine
5. Build **clinical practice "laboratories"** to study evidence translation and uptake
6. Invest long term in **automated evidence synthesis**
7. ...



Some Proposals for EBHC's future

1. Don't skip **step 0**: foster doubt, uncertainty and honesty
2. Beware **over-diagnosis**: overdetection & overdefinition

ResearchWaste and 21 others follow



Nino Cartabellotta @Cartabellotta · 10h
#ebhc2015 impact of waste on Italian NHS using @donberwick taxonomy
@ProfAlanMaynard @TheEconomist

Impact of waste on Italian NHS in 2014

Waste category	%	€ billions	± 20%
1. Overuse	30	7,69	(6,15 – 9.23)
2. Fraud and abuse	20	5,13	(4,10 – 6.15)
3. Pricing failures	16	4,10	(3,28 – 4.92)
4. Underuse	12	3,08	(2,46 – 3,69)
5. Administrative complexity	12	3,08	(2,46 – 3,69)
6. Failures of care coordination	10	2,56	(2,05 – 3.08)



s pharmaceuticals
sion Making

dy evidence

athesis

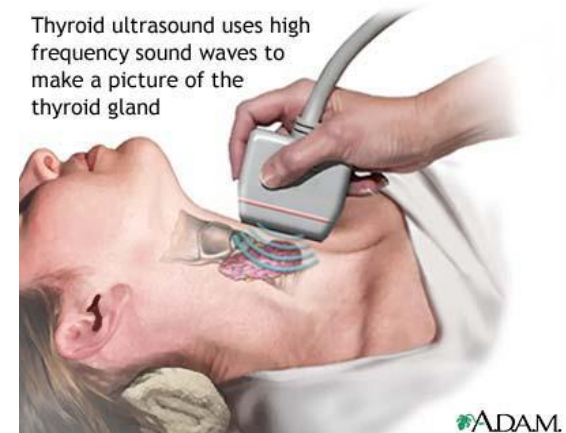
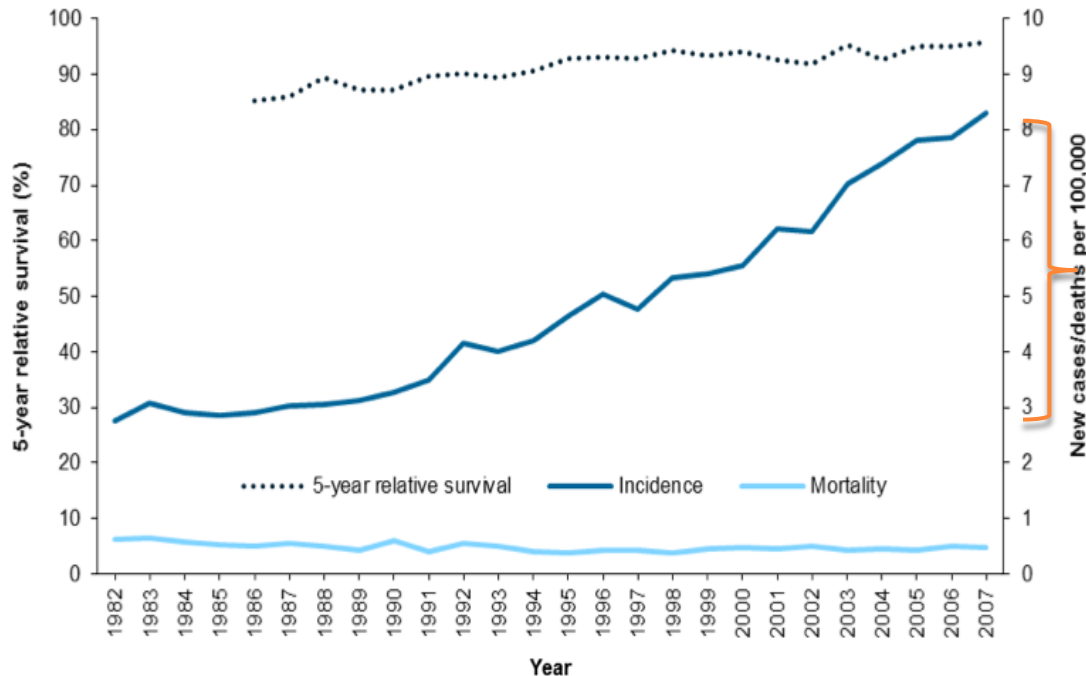


Three types of Overdiagnosis

1. **Over-detection**, e.g, cancer screening, incidental MRI findings, etc
2. **Expanded definitions**, e.g, Diabetes, CKD, ADHD,
3. **Medicalization**, e.g, “female sexual dysfunction”, hypotrichosis,

A. Overdetection: thyroid cancer

Thyroid cancer tripled in 25 years; no more deaths



Notes

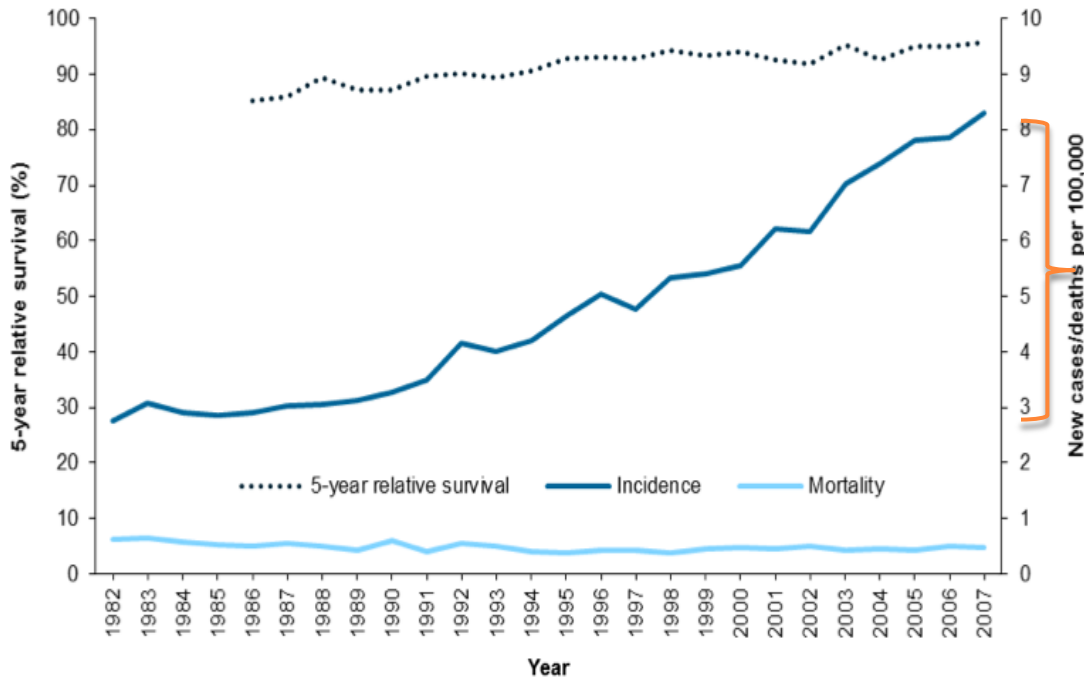
1. Incidence and mortality rates are age standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.
2. Survival data for this figure are presented in online Table S26.3.

Source: AIHW Australian Cancer Database (2007); AIHW 2010b.

Figure 4.73: Yearly trends in incidence, mortality and 5-year relative survival of thyroid cancer, 1982 to 2007

A. Overdetection: thyroid cancer

Thyroid cancer tripled in 25 years; no more deaths



Notes

1. Incidence and mortality rates are age standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.
2. Survival data for this figure are presented in online Table S26.3.

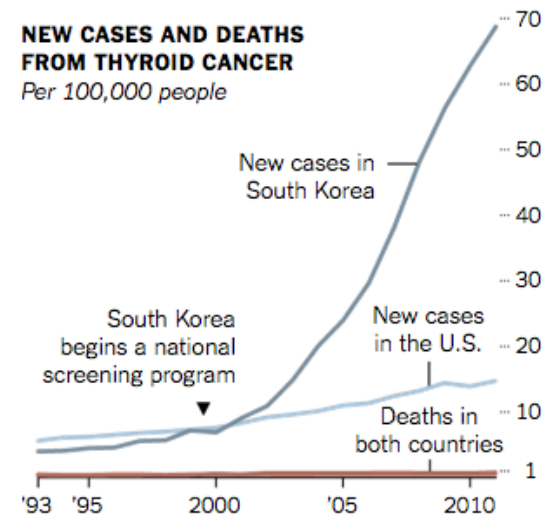
Source: AIHW Australian Cancer Database (2007); AIHW 2010b.

Figure 4.73: Yearly trends in incidence, mortality and 5-year relative survival of thyroid cancer, 1982 to 2007

Screening for Thyroid Cancer

Since South Korea adopted widespread cancer screening in 1999, thyroid cancer has become the most diagnosed cancer in the country. But if this early detection were saving lives, the already-low death rate from thyroid cancer should have fallen, not remained steady.

NEW CASES AND DEATHS FROM THYROID CANCER Per 100,000 people

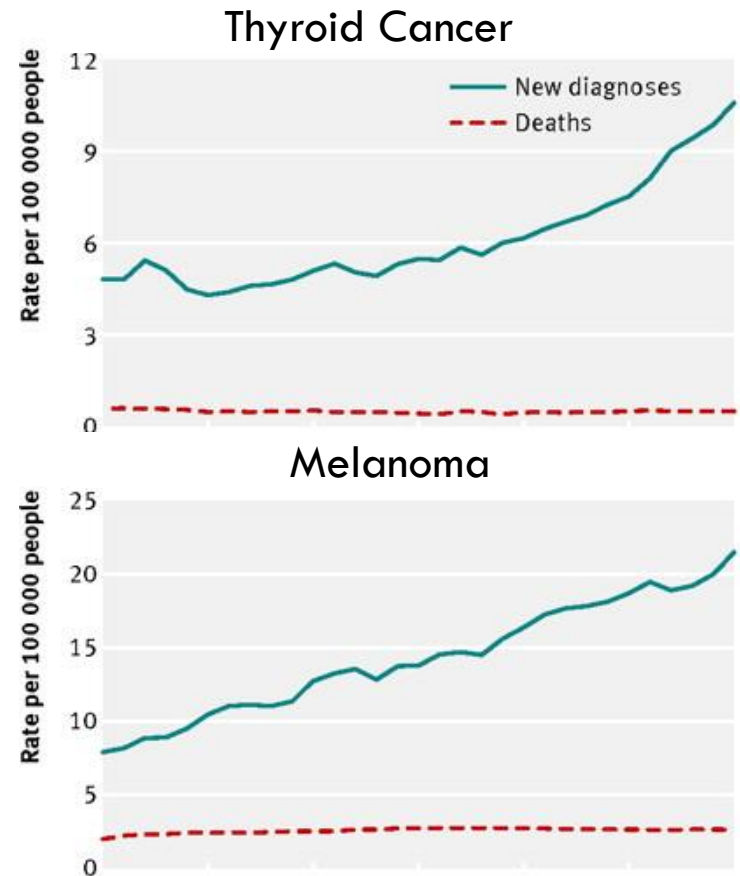
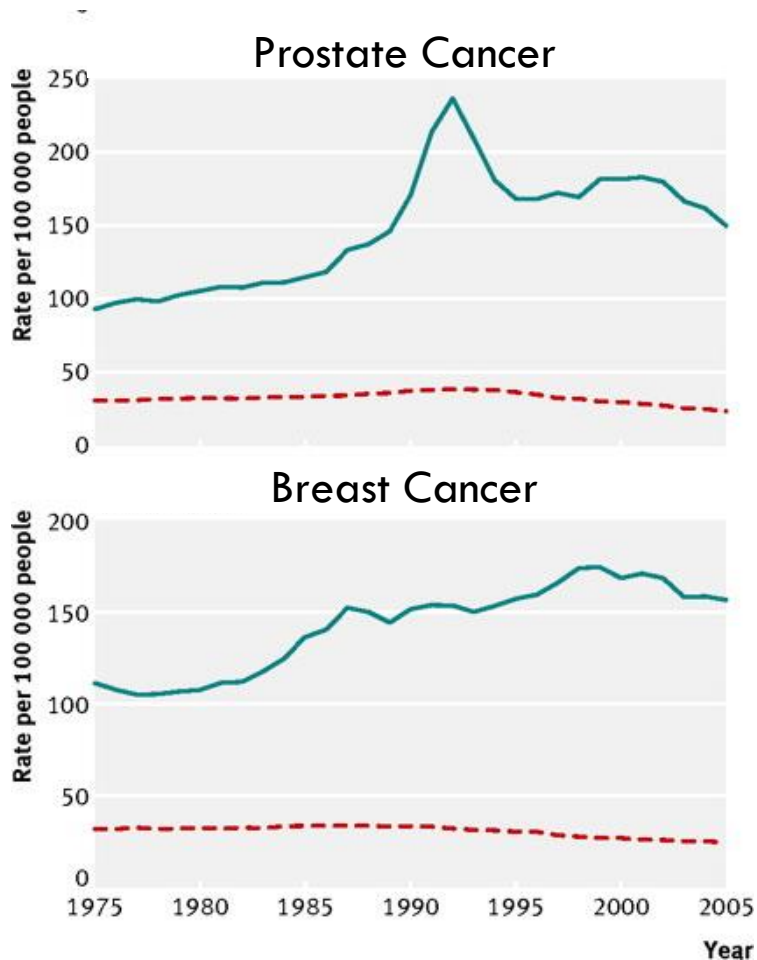


Sources: New England Journal of Medicine; National Cancer Institute

By The New York Times

A. Overdetection: 4 cancers

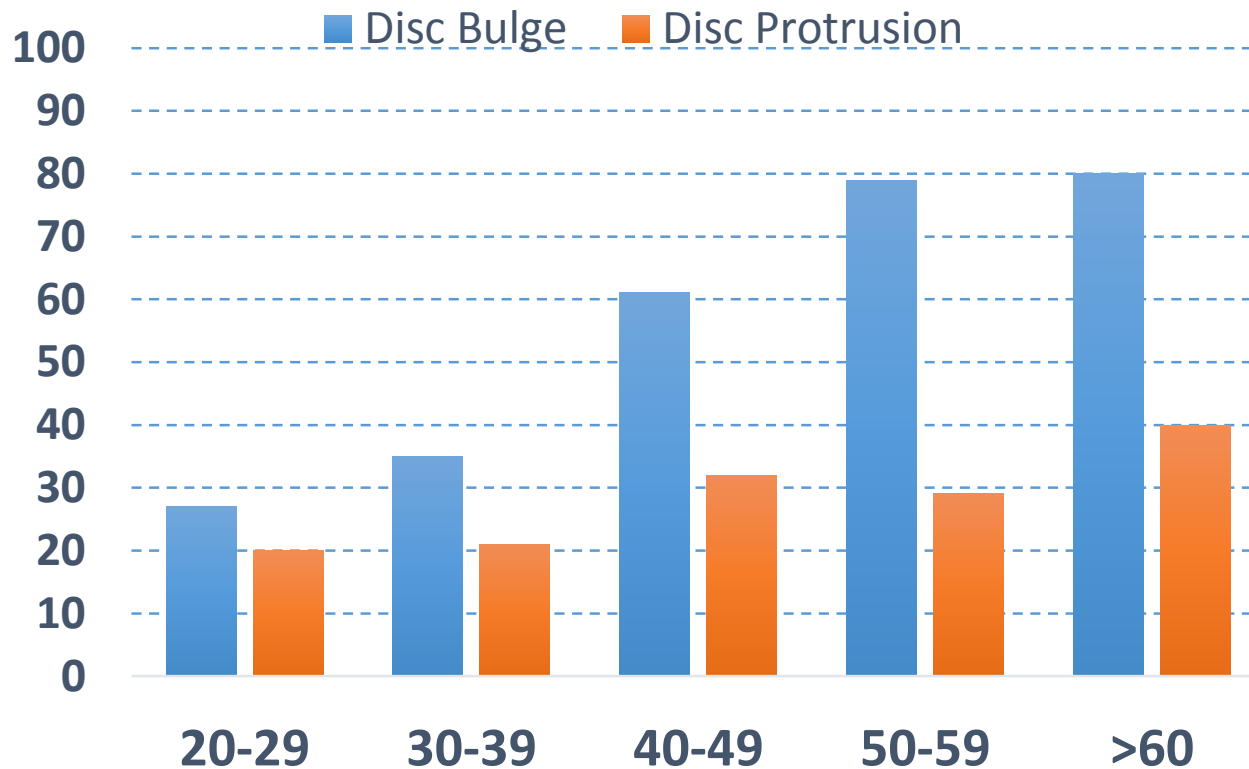
An epidemic of diagnosis, not an epidemic of cancer!



Source: AIHW

Incidentalomas in MRI of spine

% of asymptomatic patients with MRI

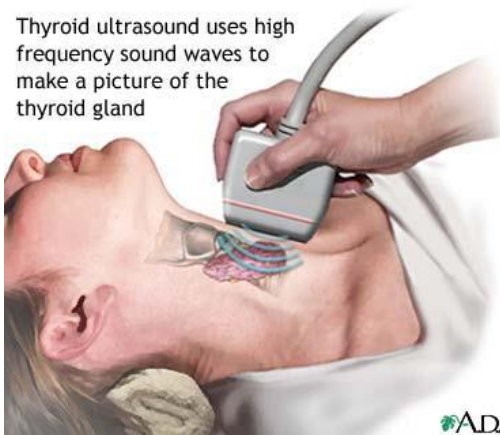


Disc protrusion in 24 year old with no back pain

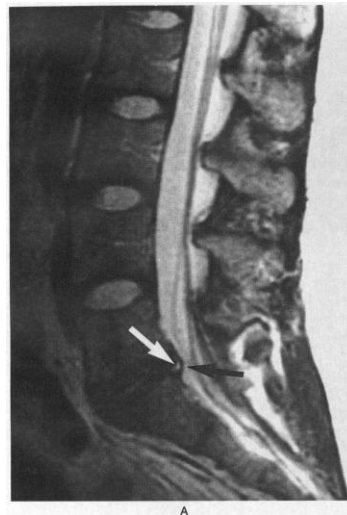
Too much testing?

“A well person is someone who has not been completely worked up.”
- Clifton Meador

Thyroid ultrasound uses high frequency sound waves to make a picture of the thyroid gland



ADAM.



A

PROVEN
DIAGNOSTICS

PROVEN DIAGNOSTICS
252 BRODHEAD ROAD
BETHLEHEM, PA 18017
CLIA 100120099
610-669-2114
Harold Morrison, MD, PhD, Medical Director

Lab Administration
252 Brodhead Road
BETHLEHEM, PA 18017

NAME	OFFICE PR #	PHONE	DOB	AGE	SEX
PATIENT, TEST	123456789		01/01/1970	39 Yrs	M
ACQUISITION #	BILLING ACCOUNT #	COLLECTED DATE	RECEIVED DATE	ORDERING PR	DOC, TEST
M54454	80001069	06/29/2009 08:00	06/29/2009 08:05		
Test Description	Result	Abnormal	Reference Range	Units	Lab
BASIC METAB PANEL Result: 06/29/2009 08:19 Status: F					
BUN	16		6-20	mg/dL	P1
CREATININE	0.9		0.7-1.5	mg/dL	P1
SODIUM	145		135-146	mmo1/L	P1
POTASSIUM	3.5		3.5-5.1	mmo1/L	P1
CHLORIDE	110		98-111	mmo1/L	P1
CO2	22		22-32	mmo1/L	P1
GLUCOSE	250	H	70-120	mg/dL	P1
RESULTS RECHECKED					
ANION GAP	13		7-15	mEq/L	P1
CALCIUM	9.5		8.3-10.5	mg/dL	P1
GFR ESTIMATED	>60.0		>60	mL/min	P1

Performing Laboratory Information:

P1 - PERFORMED AT PROVEN DIAGNOSTICS LABORATORY 252 BRODHEAD RD BETHLEHEM PA 18017

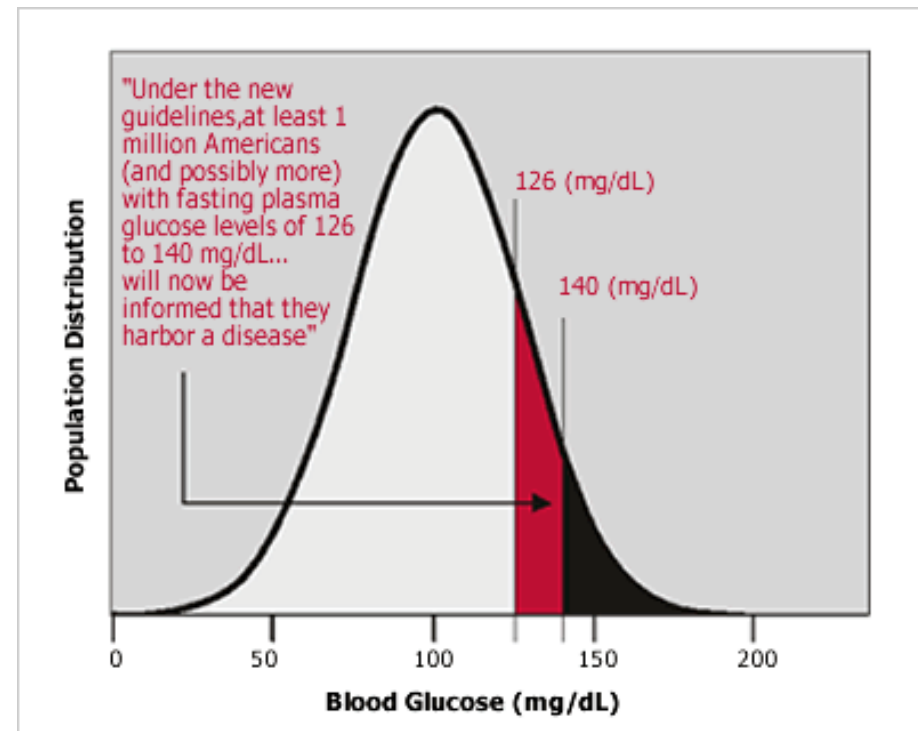
B. Expanding definitions of Diabetes

Change of Definition



Impact of Definition Changes on:

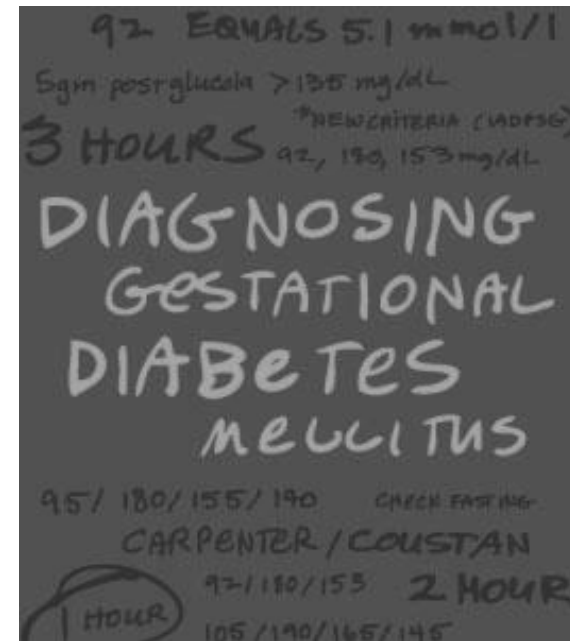
- Trial interpretation, eg UKPDS
- Risk Scores, eg Framingham



2003 ADA update

A Tale of Two GDM Definitions

- New criteria for diagnosing Gestational Diabetes (GDM) by *International Association of Diabetes in Pregnancy Study Group (IADPSG)*
- Increase GDM diagnoses from **6% (WHO)** to **18% (IADPSG)**
- **Cost** extra \$US2.5 billion/year
- Based on risk of adverse outcome
- **NO evidence treatment of new cases improve outcomes**



NIH Development Conference:
Diagnosing Gestational
Diabetes Mellitus

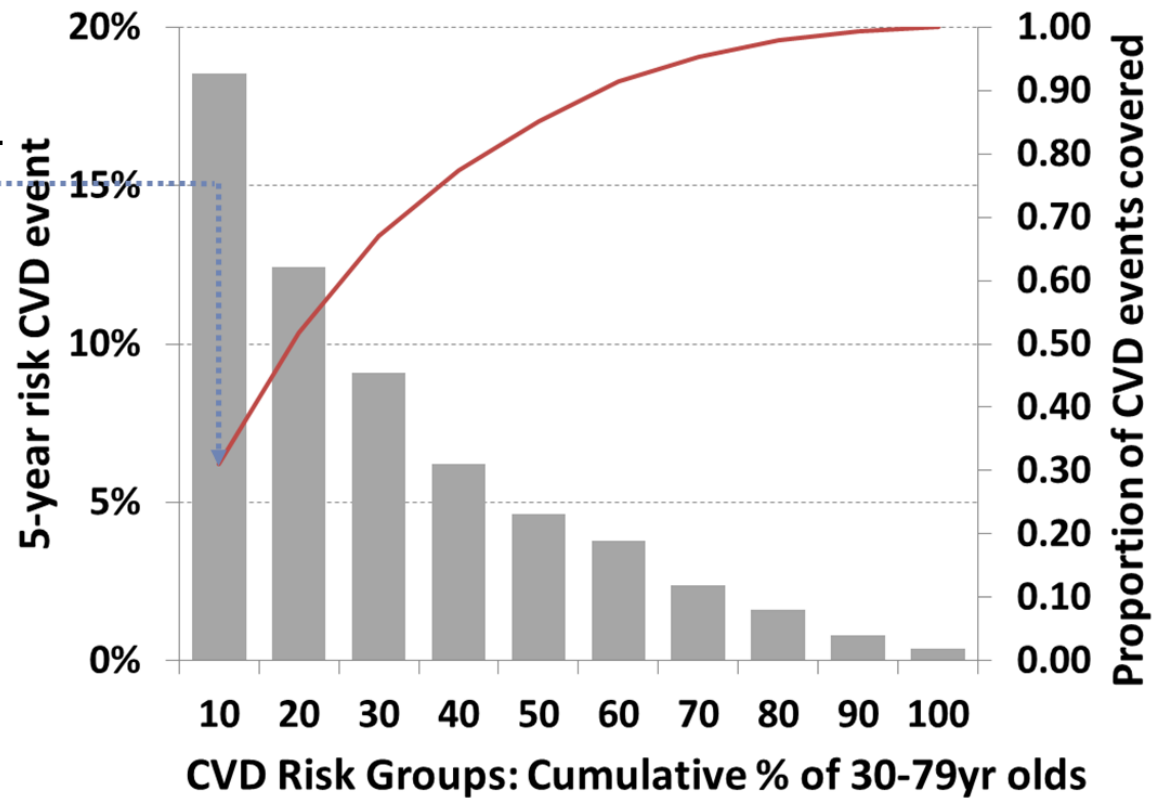
March 4–6, 2013
Bethesda, Maryland

Declining thresholds; increasing prevalence

LOWERING OF THE CVD RISK THRESHOLD

5-year CVD risk threshold

1990's New Zealand 15%



Declining thresholds; increasing prevalence

LOWERING OF THE CVD RISK THRESHOLD

5-year CVD risk threshold

1990's New Zealand 15%

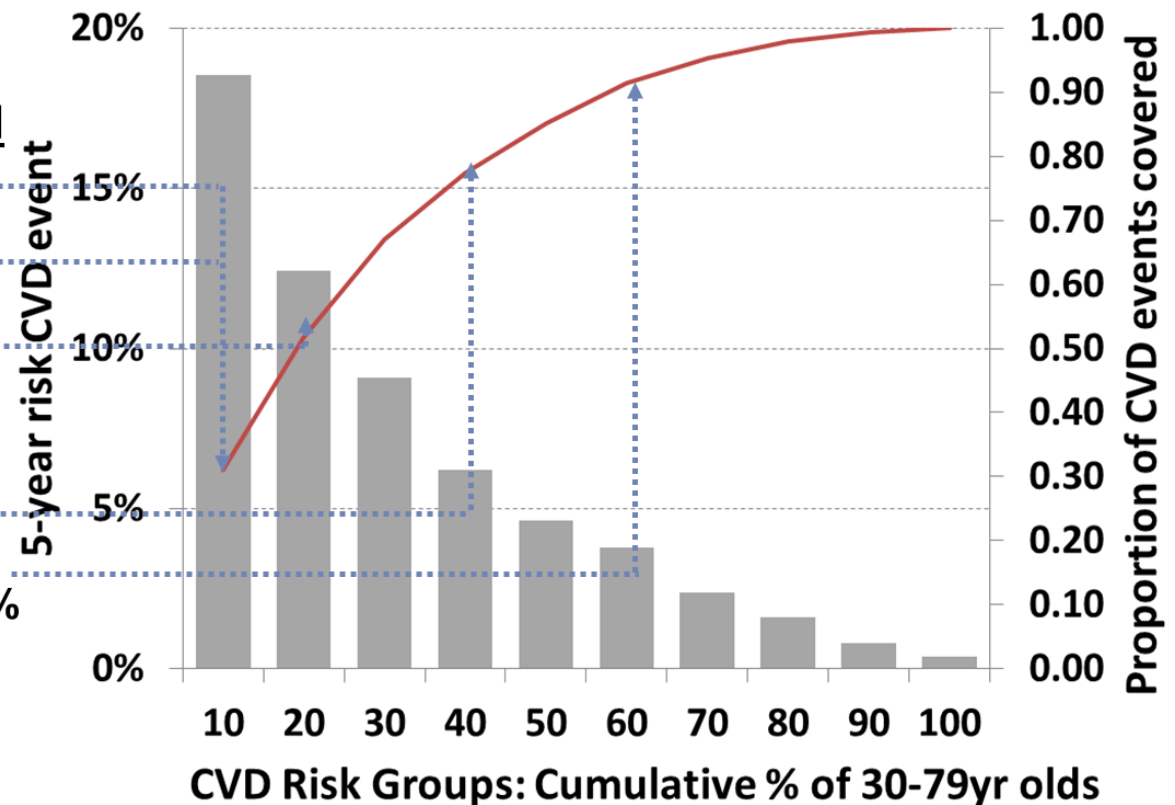
2001 - Australia: 10–15%

2006 - NICE (UK) 10%

2014 – NICE (UK) 5%

2014 – CC-AHA (USA) 3.75%

(* CC-AHA is 7.5% in 10-yrs)



Expanding Disease Definitions in Guidelines and Expert Panel Ties to Industry: A Cross-sectional Study of Common Conditions in the United States

Raymond N. Moynihan^{1*}, Georga P. E. Cooke¹, Jenny A. Doust¹, Lisa Bero², Suzanne Hill³, Paul P. Glasziou¹

¹ Bond University, Robina, Australia, ² University of California, San Francisco, San Francisco, California, United States of America, ³ Australian National University, Acton, Australia

- Of 16 publications on 14 common conditions, **10 widened** and 1 narrowed definitions.
- Widen by 3 methods: (i) “pre-disease”; (ii) lowering thresholds; (iii) earlier or new diagnostic methods.

CONCLUSION:

“research and policy attention might be directed at designing new processes for reviewing disease definitions, free of financial conflicts of interest and informed by rigorous analysis of benefits and harms.”

C. Medicalization



Do you hate someone else's appearance?

Is it making you miserable? Ruining a relationship?
You may have Body Dysmorphic Disorder by proxy.
Contact us to learn about research and therapy options.

  (617)643-6204
mghocd.org/bddbp

*Consent to being used for illustrative purposes only and any person depicted in the context is a model.



Then you might have
“Body Dysmorphic Disorder by Proxy”

Saving Normal

DSM 5 Is Guide Not Bible—Ignore Its Ten Worst Changes

APA approval of DSM-5 is a sad day for psychiatry.

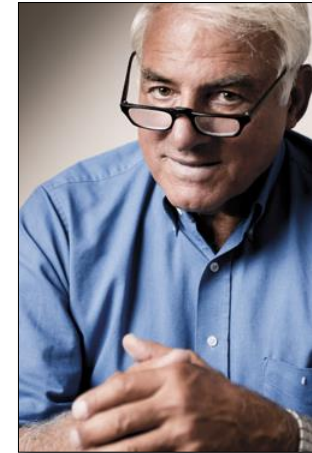
Post published by Allen J Frances M.D. on Dec 02, 2012 in DSM5 in Distress

 Like 11k

This is the saddest moment in my 45 year career of studying, practicing, and teaching psychiatry. The Board of Trustees of the American Psychiatric Association has given its final approval to a deeply flawed DSM 5 containing many changes that seem clearly unsafe and scientifically unsound. My best advice to clinicians, to the press, and to the general public - be skeptical and don't follow DSM 5 blindly down a road likely to lead to massive over-diagnosis and harmful over-medication. Just ignore the ten changes that make no sense.

Brief background. DSM 5 got off to a bad start and was never able to establish sure footing. Its leaders initially articulated a premature and unrealizable goal- to produce a paradigm shift in psychiatry. Excessive ambition combined with disorganized execution led inevitably to many ill conceived and risky proposals.

These were vigorously opposed. More than fifty mental health professional associations petitioned for an outside review of DSM 5 to provide an independent judgment of its supporting evidence and to evaluate the balance between its risks and benefits. Professional journals, the press, and the public also weighed in- expressing widespread astonishment about decisions that sometimes seemed not only to lack scientific support but also to defy common sense.



Allen Frances,
Chair DSM IV

saving

nor•mal (nôr'mal)
1. an insider's revolt against out-of-control psychiatric diagnosis, DSM-5, big pharma, and the medicalization of ordinary life

Allen Frances, M.D.
Chair of the DSM-IV Task Force

Saving Normal

DSM 5 Is Guide Not Bible—Ignore Its Ten Worst Changes

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Like 11k



Allen Frances,
Chair DSM IV

Diagnosis and screening

Sackett's "Normal"s

Table 5.1 Six definitions of normal

1. *Gaussian*: the mean \pm 2 standard deviations (SD) – this one assumes a normal distribution for all tests and results in all "abnormalities" having the same frequency.
2. *Percentile*: within the range, say of 5–95% – has the same basic defect as the Gaussian definition. Implies a specificity of 95% but with unknown sensitivity.
3. *Culturally desirable*: when "normal" is that which is preferred by society, the role of medicine gets confused.
4. *Risk factor*: carrying no additional risk of disease; nicely labels the outliers, but does changing a risk factor necessarily change risk?
5. *Diagnostic*: range of results beyond which target disorders become highly probable; the focus of this discussion.
6. *Therapeutic*: range of results beyond which treatment is recommended that

but also to defy common sense.

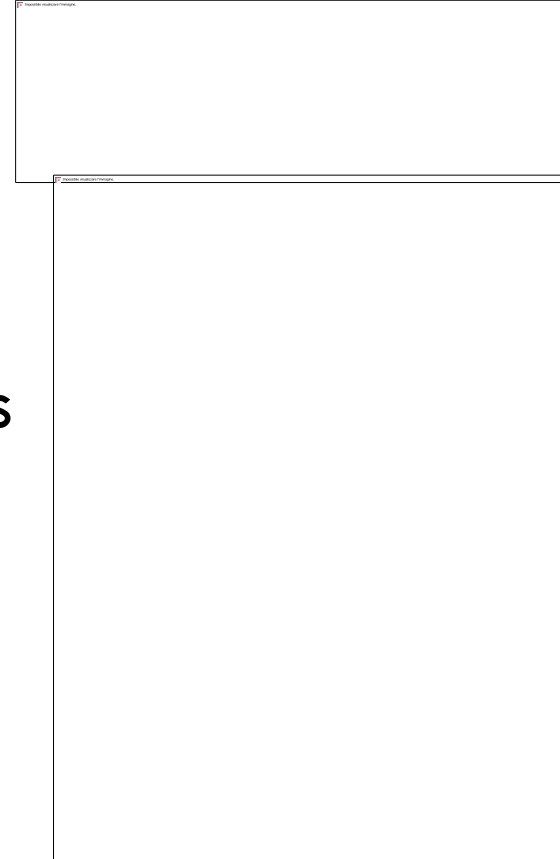
saving

nor•mal (nôr'm)
1. an insider's revolt against out-of-control psychiatric diagnosis, DSM-5, big pharma, and the medicalization of ordinary life

Allen Frances, M.D.
Chair of the DSM-IV Task Force

What can we do?

1. Raise awareness
2. Inform patients of pros & cons
3. Guidelines for disease definitions
4. Invest in research & policy initiatives
5. ...



1 Raise Awareness: #Overdiagnosis



Conference partners

2013 Dartmouth
2014 Oxford
2015 Washington

Home

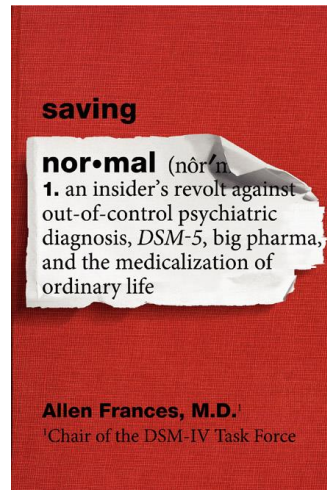
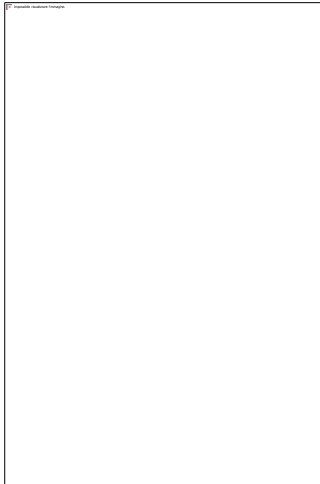
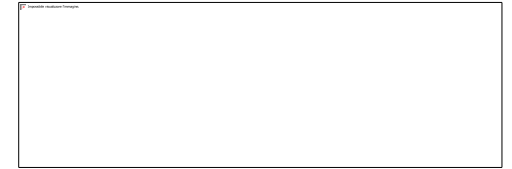
About

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**Choosing Wisely
Australia**

An initiative of NPS MedicineWise

(Launch in April, 6 Colleges)

2 Inform patients of pros and cons

- Patients overestimate benefits and underestimate harms (of screening, treatments, etc)
- Informing patients often dampens enthusiasm
- Two processes
 - ▣ For individuals: shared decision making
 - ▣ For policy: community juries

3 Guidelines for disease definitions

OPEN ACCESS Freely available online

 PLOS | MEDICINE

Expanding Disease Definitions in Guidelines and Expert Panel Ties to Industry: A Cross-sectional Study of Common Conditions in the United States

Raymond N. Moynihan^{1*}, Georga P. E. Cooke¹, Jenny A. Doust¹, Lisa Bero², Suzanne Hill³, Paul P. Glasziou¹

¹ Bond University, Robina, Australia, ² University of California, San Francisco, San Francisco, California, United States of America, ³ Australian National University, Acton, Australia

- Guidelines being developed by GIN, GRADE, WHO collaboration
- 1-day Meeting: August 2014
- Position paper: 2015

What can we do?

1. Raise awareness
2. Inform patients of pros & cons
3. Guidelines for disease definitions
4. Invest in research & policy initiatives
5. ...

Paul_Glasziou@bond.edu.au
www.crebnet.net.au

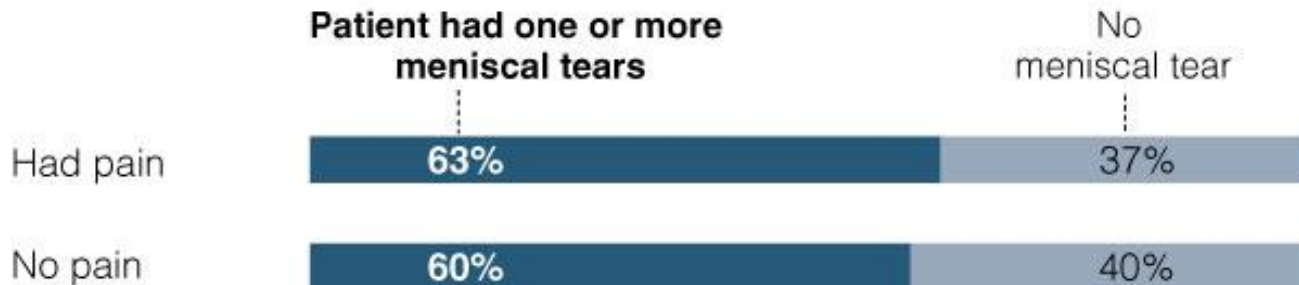


Meniscal tears: MRI vs pain

Before You Go for Surgery ...

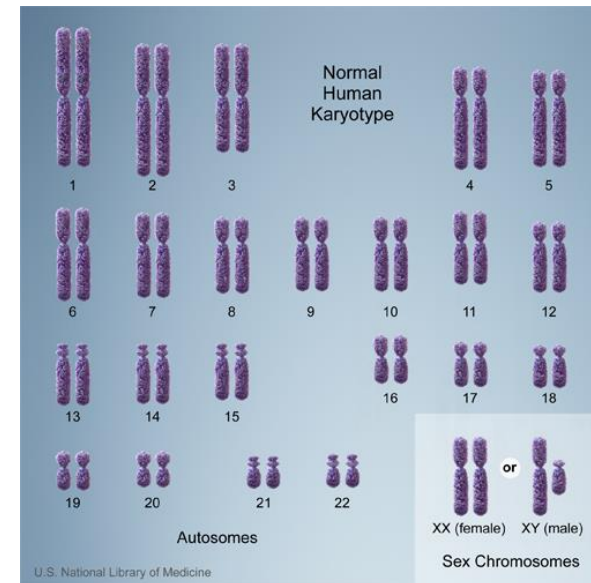
A study showed that frequent knee pain and stiffness may have nothing to do with the knee injury called a meniscal tear but may be related to arthritis.

PATIENTS WITH EVIDENCE OF OSTEOARTHRITIS



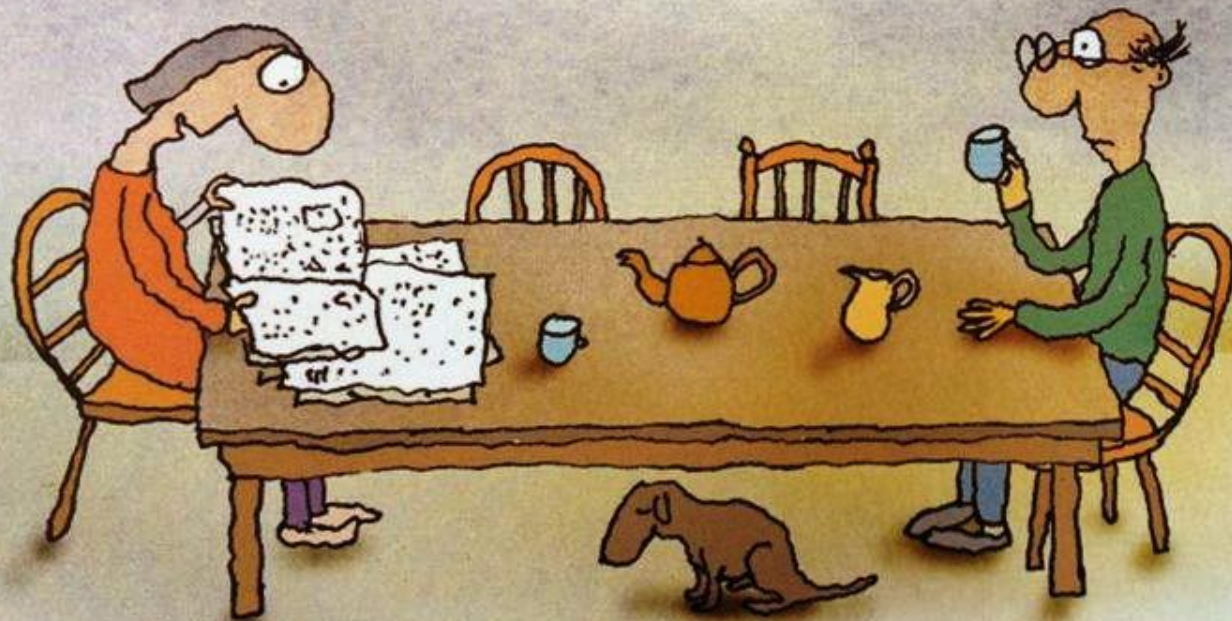
Beware pseudo-diseases

- 1800's – diseases
 - ▣ Germ theory; endocrine; etc
- 1900's – risk factors
 - ▣ Hypertension; hypercholesterolemia; etc
- 2000's – risk factors for risk factors
 - ▣ Pre-hypertension; pre-diabetes; etc



100% fatality rate!

oh darling... what a pity...
I think your interesting personality
has just been classified as
a personality disorder.



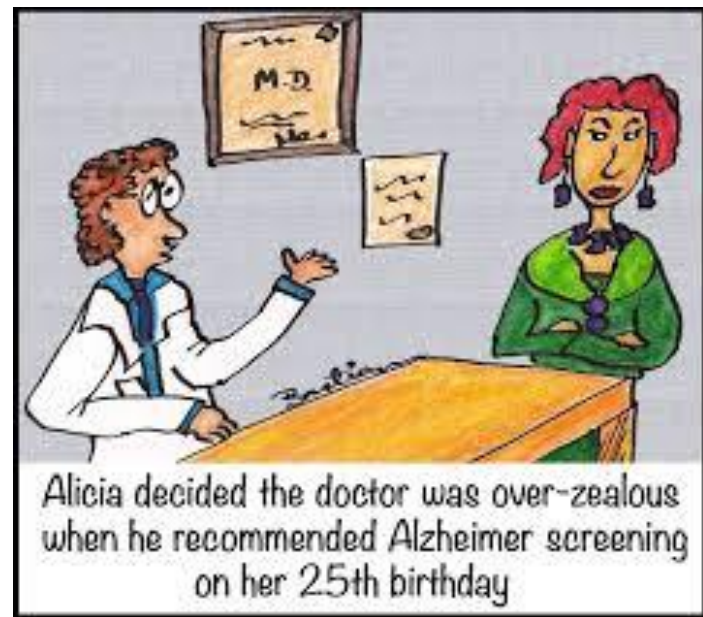
Leunig

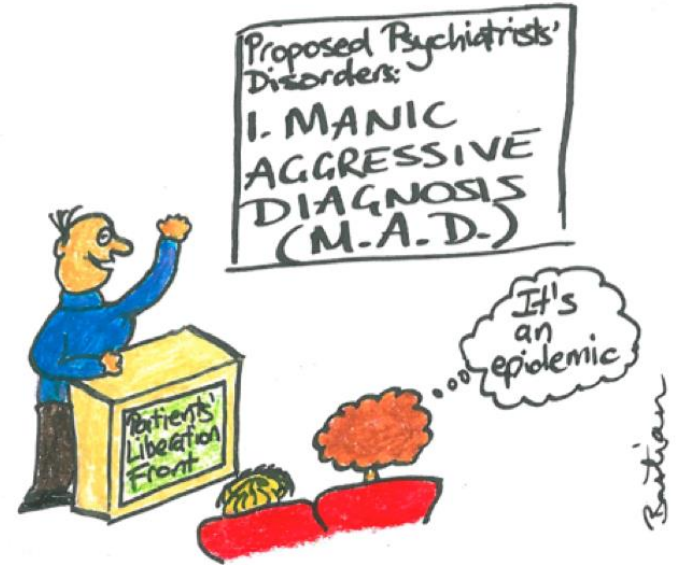
ALL-NITE DRIVE-THRU
SCREENING CLINIC

I'M
OBLIGED TO
INFORM YOU:
YOU HAVE THE
RIGHT TO REMAIN
ANXIOUS.

ANYTHING
YOU SAY
WILL BE USED
TO FURTHER
TEST YOU.

IF YOU DO
NOT ALREADY
HAVE A DIAGNOSIS,
ONE WILL BE
PROVIDED
FOR YOU.





Knowing they did not need definitive research, an accurate test or effective treatment made developing new conditions for DSM-6 so much easier

Statistically-funny.blogspot.com

Why does Overdiagnosis matter?

BMJ

BMJ 2013;347:f4247 doi: 10.1136/bmj.f4247 (Published 2 July 2013)

Page 1 of 2

Too much medicine; too little care

Time to wind back the harms of overdiagnosis and overtreatment

Paul Glasziou *professor*¹, Ray Moynihan *senior research fellow*¹, Tessa Richards *analysis editor*²,
Fiona Godlee *editor in chief*²

¹Bond University, Robina, QLD 4226, Australia; ²BMJ, London WC1H 9JR, UK

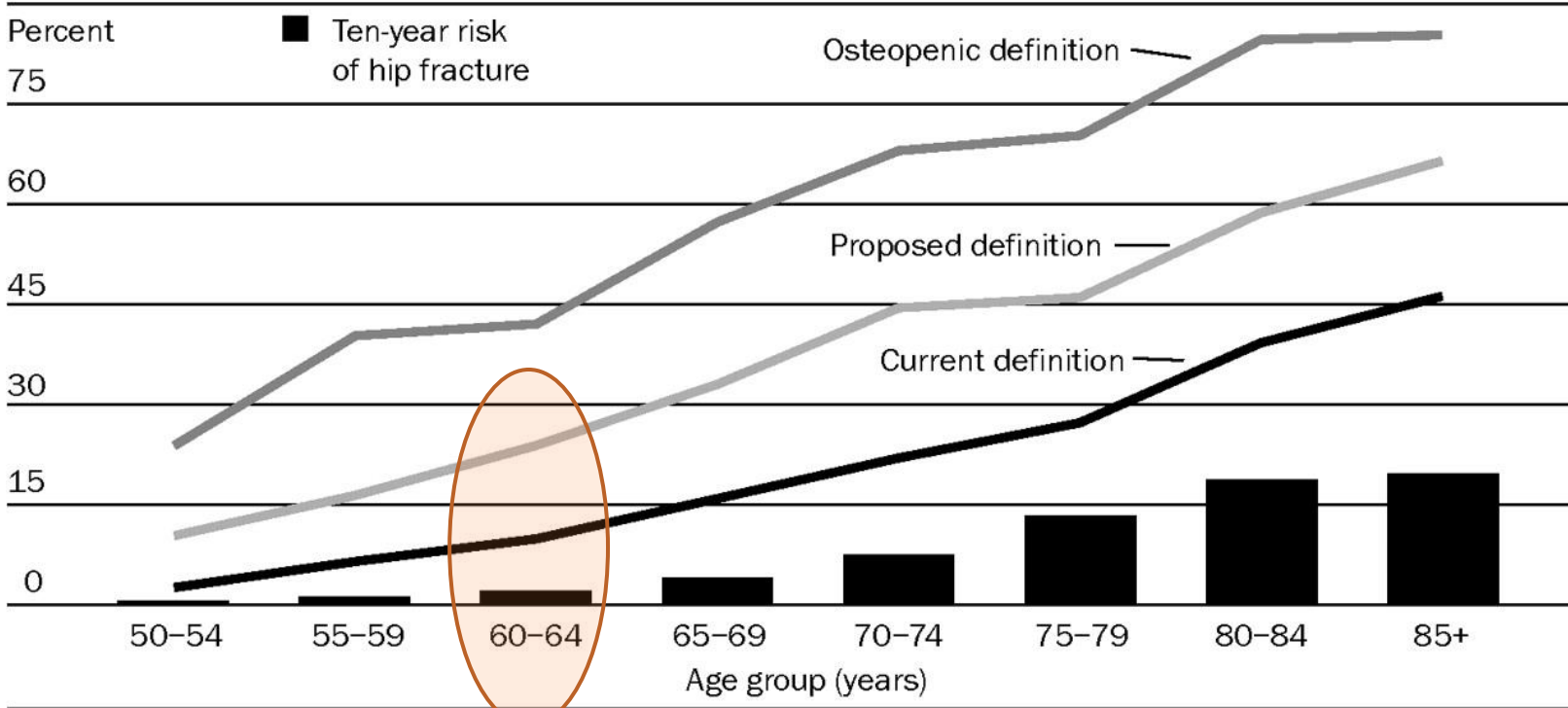
Too much testing of well people and not enough care for the sick worsens health inequalities and drains professionalism, harming both those who need treatment and those who don't.

Margaret McCartney, GP Glasgow,
Author of “The Patient Paradox”.

Osteoporosis: Prevalence for changed definition

EXHIBIT 3

Comparison Of Prevalence Of Osteoporosis At Different Disease Definitions, With Ten-Year Risk Of Hip Fracture, For Women Age Fifty And Older, United States, 2000



SOURCE: Authors' analysis of data from the National Health and Nutrition Examination Survey (NHANES III), 1988-94; the 2000 National Inpatient Sample (NIS); and the 2000 U.S. census.

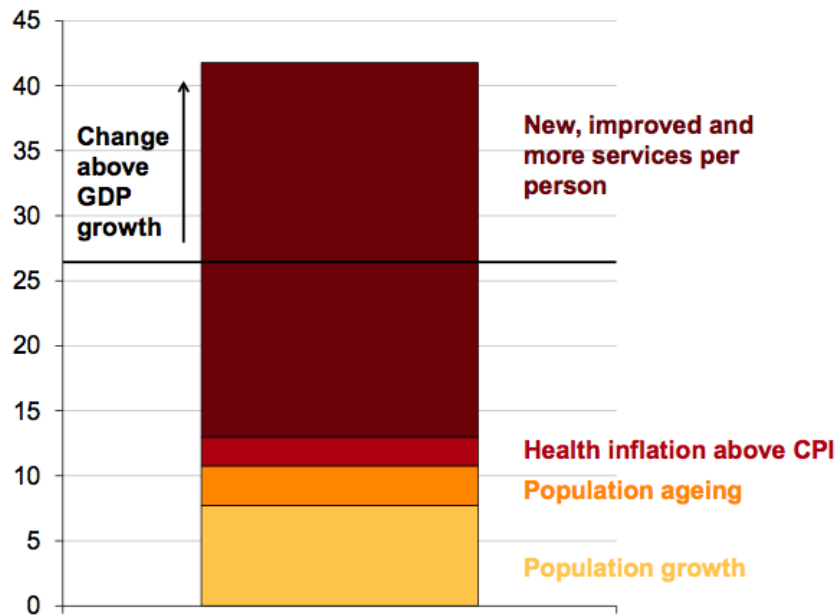
NOTE: For explanation of disease definitions, see text.

M. Brooke Herndon et al. *Health Aff* 2007;26:1702-1711

HealthAffairs

Growth in health care spending: Most is more and better (hospital) services

Figure 9: Change in Australian governments' health expenditure
\$ bn, 2002-03 to 2012-13



More, and expanded

1. Usage of **Tests**
2. Usage of **Treatments**
3. Definitions of **Disease (Overdiagnosis)**

Note: 'Population growth' models the effect of the increase in population size with no change in the age structure or average per capita health expenditure. 'Population ageing' uses age-specific per capita health expenditure data (based on AIHW figures) to model the effect of changes in the population structure. 'Health inflation above CPI' uses appropriate AIHW health price indices to model inflation in each category of expenditure. 'New, improved and more services per person' is the amount of expenditure that cannot be explained by these three factors.

Source: Grattan analysis of AIHW (2012); AIHW (2012); ABS (2013a) Cat. no. 6401.0 Tables 1 and 2; ABS (2013c) Cat. no. 3101.0 Table 59.