"I don't know why you say that making a diagnosis is the most important thing a doctor does.
As a general practitioner I hardly ever make a diagnosis."

General practitioner North London

Richard Smith BMJ 2002;324:883–5

Problem Solving

Decision Making

Malattia

Diagnosi

(non diagnosi)

Non diagnosi

Dolore toracico

Dolore addominale non determinato

Low back pain

MUPS

Quante diagnosi facciamo (fate)?

Esonerati dall’ onere della diagnosi?

Il Morbo di Schiraldi

0.1%

95%

?

Cos’è la malattia?

Linneo

The diagnoses tabulated in this way are **theoretical abstractions**, but we are inclined to give them a level of credence and reality that tends to exceed that granted to the **patients so labelled**.

In this way, our diagnoses begin to condone structural violence and to excuse social injustice.

Iona Heath president, Royal College of General Practitioners
BMJ 2012;345:e6595

Every experienced clinician is fully aware that **no two people ever experience the same diagnosed disease in exactly the same way**, and yet the taxonomies of diagnosis and the international classifications that underpin them ignore this underlying truth.

Iona Heath president, Royal College of General Practitioners
BMJ 2012;345:e6595

Medicalising unhappiness

Dowrick C, Frances A BMJ 2013;347:f7140

It allows major depressive disorder to be diagnosed **just two weeks after a bereavement**.

Turning grief into a mental disorder substitutes **a superficial medical ritual** for deep and time honoured cultural ones.

Dowrick C, Frances A BMJ 2013;347:f7140

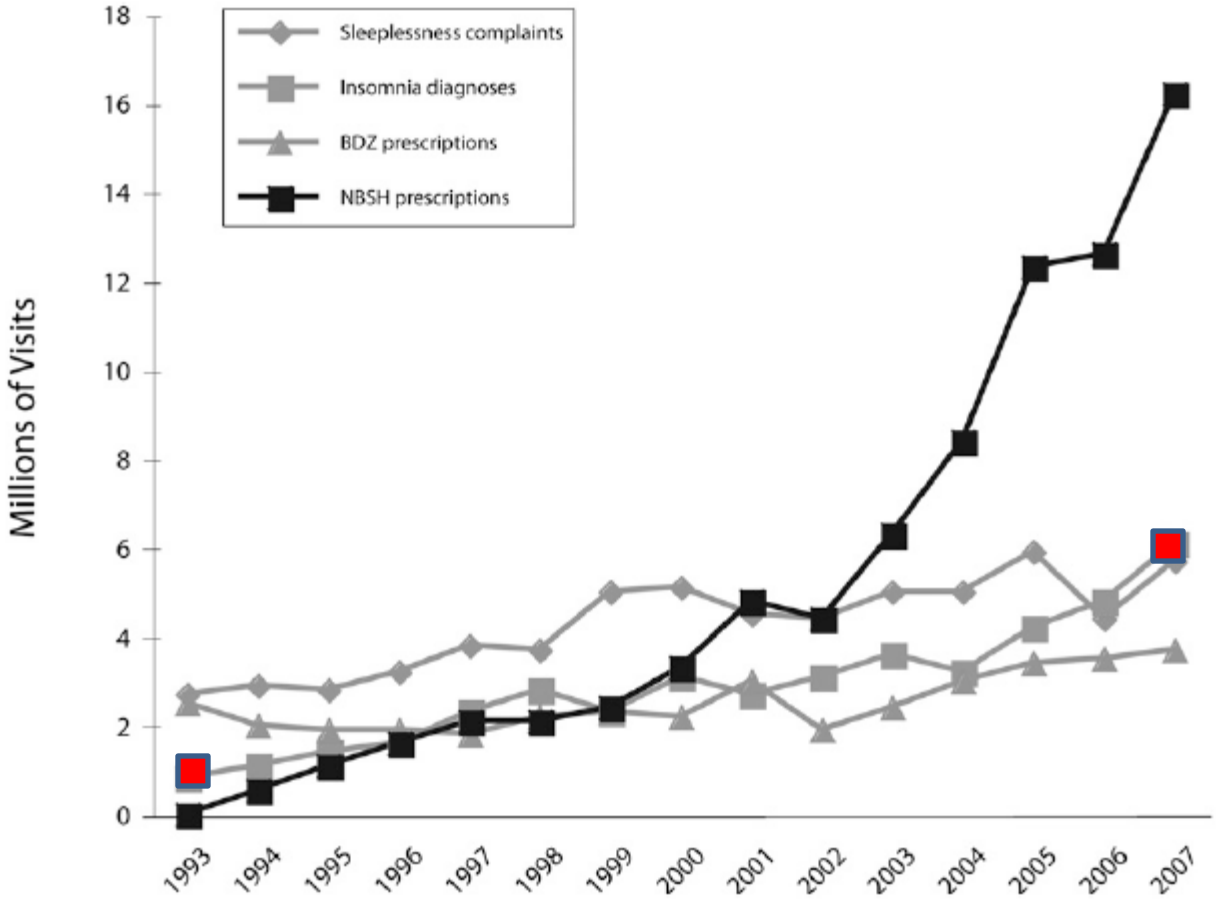


FIGURE 1—Sleeplessness-related trends of complaint, insomnia diagnosis, benzodiazepine (BDZ) and nonbenzodiazepine sedative hypnotic (NBSH) prescription as a result of physician office visits: United States, 1993–2007.

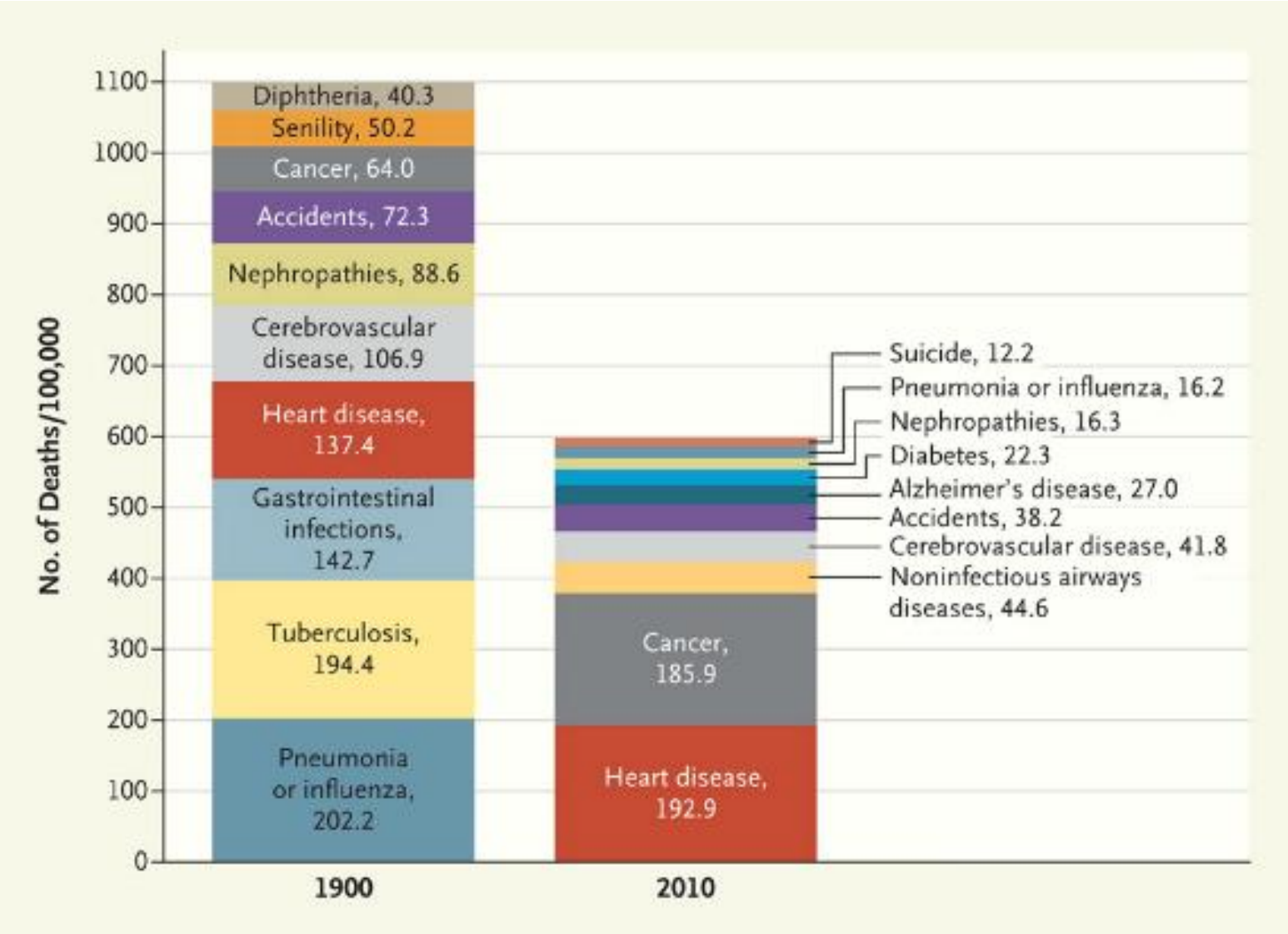
Am J Public Health. 2011;101:1429–1433

Benzodiazepine use is associated with an increased risk of Alzheimer's disease.

Unwarranted long term use of these drugs should be considered as a public health concern.

BMJ 2014;349:g5205

Il mondo cambia



N Engl J Med 2012; 366:2333-2338

Comorbidità

Fuoco amico

Critical illness are an intrinsecally iatrogenic disorder

Crit Care 2011 15: 22

*

Sepsis is not simply the host response to an infection, nor is it the same as sterile inflammation.

Rather, sepsis is **the host's deleterious, non-resolving inflammatory response to infection that leads to organ dysfunction**.

Vincent JL et al Sepsis definitions: time for change. Lancet. 2013;381(9868):774-775.

The combination of **genetic factors** and **environmental exposures** provides the crucial mix to produce the biological events that lead to individual diseases and diseases in individuals.

John Bell
Redefining disease
Harveian Oration 2010

Demystifing diagnosis

Against diagnosis

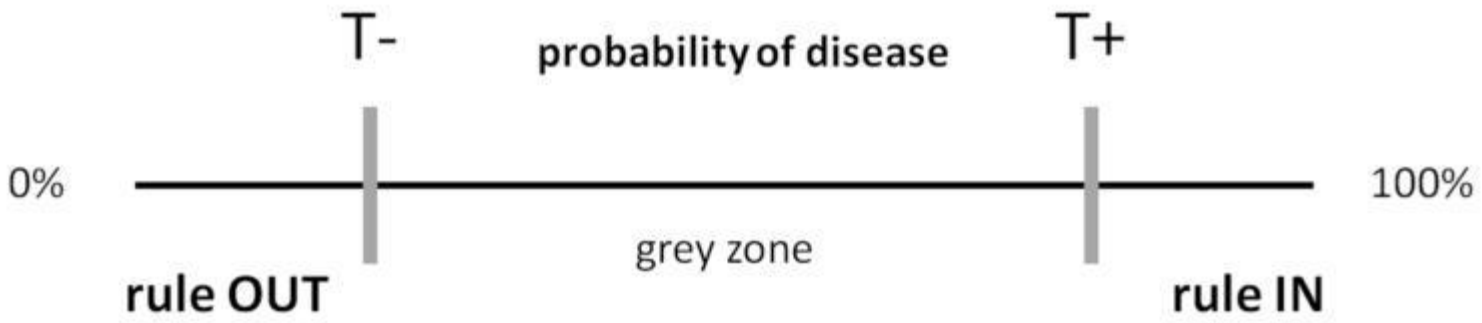
La diagnosi è un’opinione

La revisione di un opinione

Un nodo decisionale.

Il livello di incertezza al quale è possibile decidere minimizzando le conseguenze prevedibile degli inevitabili errori.

Pagliaro, Colli, Bobbio
La diagnosi in Medicina


T-
probability of disease
T+
0%
100%
grey zone
rule OUT
rule IN

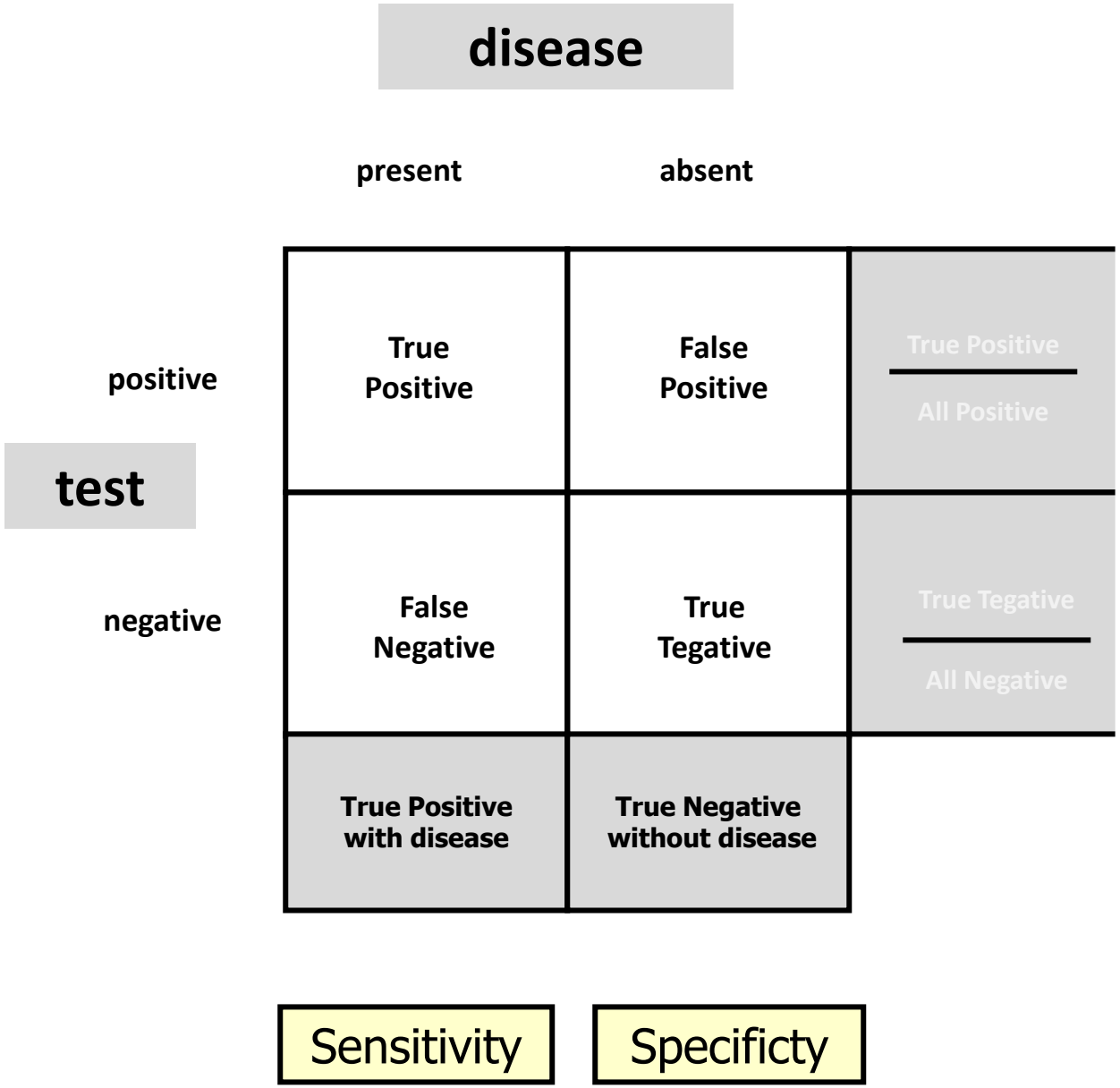
We believe in the ***objectivity***, ***utility***, and ***veracity*** of test results.

The common problem of overtesting and overreliance on tests is also compounded by an even trickier, and even deeper secret about tests: ***we don't understand them***.

David Newman, Hyppocrates' shadow

Faced with uncertainty and the **fear of uncertainty**, clinicians may find themselves ordering batteries of tests, perhaps especially younger clinicians and those working in more litigious environments.

Fiona Goodley BMJ 2014;349:g6665


disease
present
absent
positive
test
negative
True Positive
False Positive
True Positive
All Positive
False Negative
True Tegative
True Tegative
All Negative
True Positive with disease
True Negative without disease
Sensitivity
Specificty

Sn - positive in disease

Sn OUT

Sp - negative in health

Sp IN

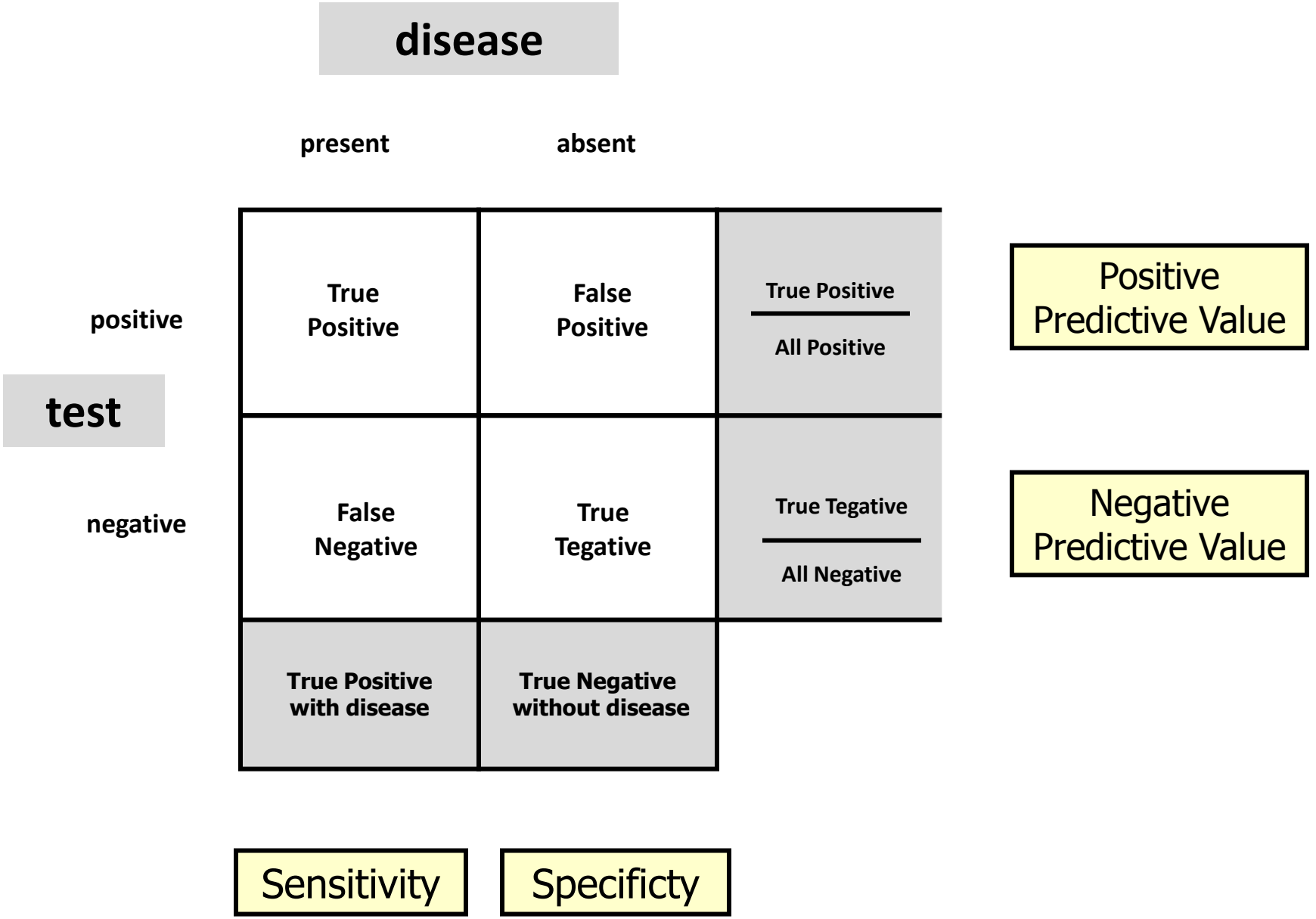
Sensibilità e **specificità** sono

caratteristiche del test.

Ci dicono come funziona il **test** in popolazioni che

SAPPIAMO avere o non avere la malattia.

Quindi non servono?



IX congresso nazionale
simeu
TORINO 6-8 NOVEMBRE 2014

Bayes's theorem of diagnostic probability states that **the predictive value of an abnormal test will vary according to the *probability* of disease** in the ***population*** under study

Prevalenza

prevalenza

proporzione di una data popolazione in cui la malattia è presente

probabiltà **PRE-TEST**

(prevalenza stimata della malattia)

la **prevalenza** della malattia

In **clinica** varia sulla base di

storia, segni e sintomi

probabiltà **PRE-TEST**

Quale popolazione?

Un test per HIV ha lo stesso PPV o NPV in un

convento di clausura e in un carcere?

Una popolazione di un individuo

Tra due specchi

L’insostenibile leggerezza dell’ ST

Likelihood ratio

$$LR+ = \frac{Sens}{1 - Spec}$$

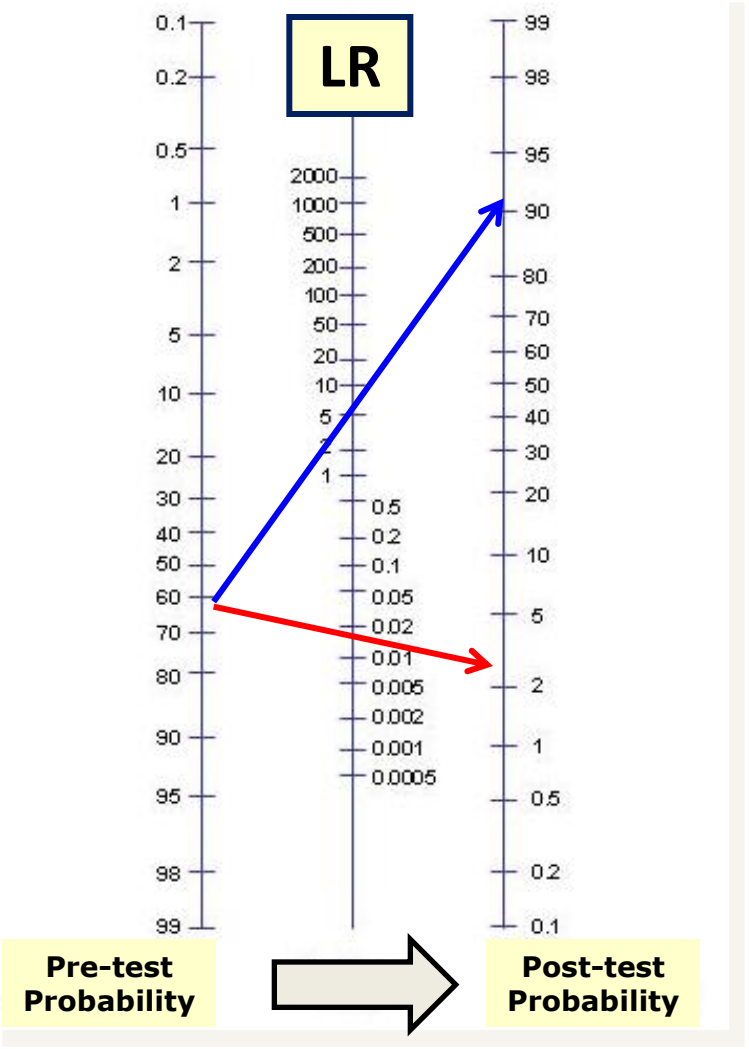
$$LR+ = \frac{VP}{FP}$$

$$LR- = \frac{1 - Sens}{Spec}$$

$$LR- = \frac{FN}{VN}$$

LR+		LR-
>10	diagnostico	<0.1
5-10	forte	0.1-0.2
3-5	moderato	0.3-0.5
1.1-3	debole	0.5-0.9
1	inutile	**1**

LR indica di quanto un segno clinico o un test diagnostico **alzano** o **abbassano** la ***probabilità pretest*** della malattia (*quella malattia*).



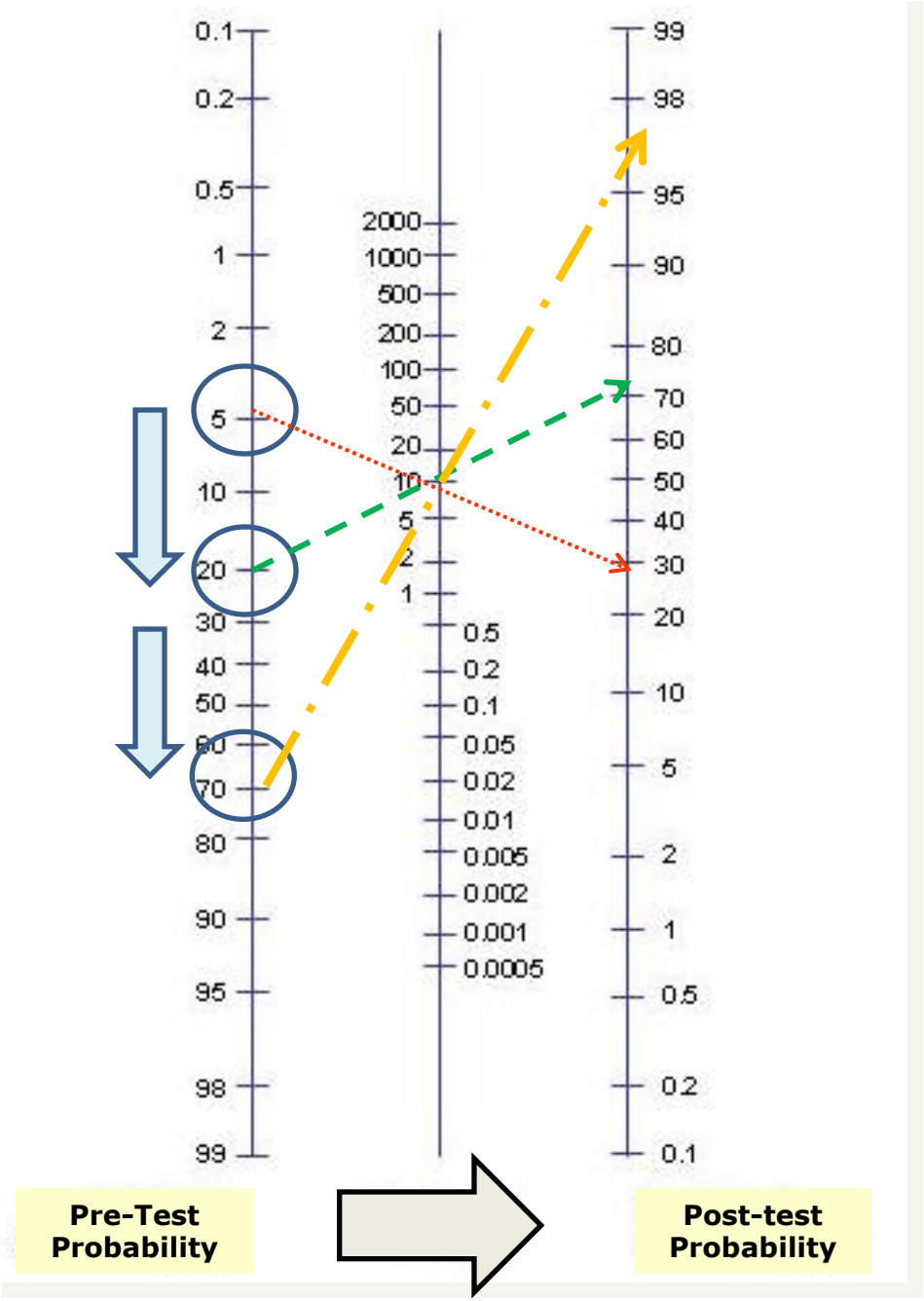
Revisione della probabilità

Bayes ha vinto la guerra

By updating our initial belief about something with objective new informations, we get a new and improved belief. This is an elegant statement about learning from experience.

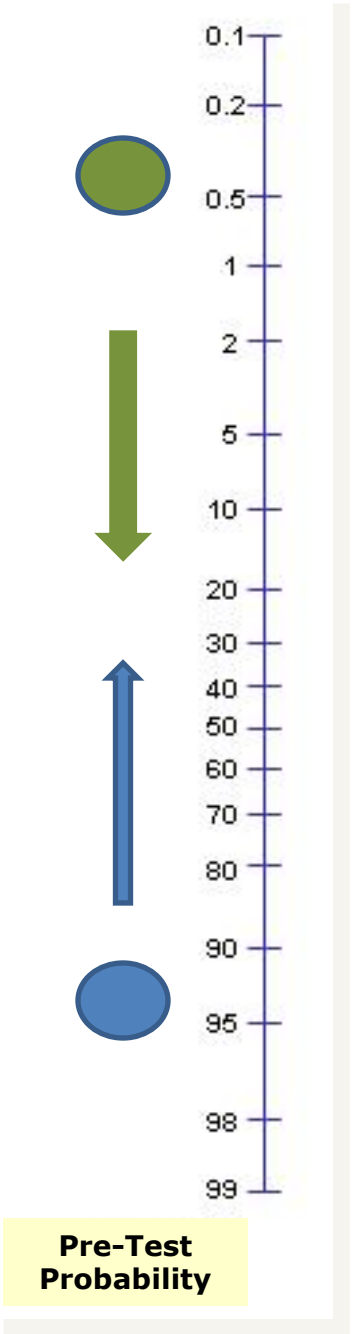
(S.Bertsch McGrayne)

Se oggi c’è il sole.


0.1
0.2
0.5
1
2
5
10
20
30
40
50
60
70
80
90
95
98
99
2000
1000
500
200
100
50
20
10
5
2
1
0.5
0.2
0.1
0.05
0.02
0.01
0.005
0.002
0.001
0.0005
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
Pre-Test Probability
Post-test Probability

Come arrivare ad una ragionevole probabilità a priori (pretest)?

- Impressione soggettiva
- Scores clinici
- Anamnesi
- Esame obiettivo



"To be a good diagnostician, a physician needs to acquire a ***large set of labels for disease***, each of which binds an idea of the illness and its symptoms, possible antecedents and causes, possible developments and consequences, and possible intervention to in part cure or mitigate the illness.

Kahaneman

Learning medicine consists in part of learning the language of medicine.”

Kahaneman

Pattern recognition

Conoscere per riconoscere.

Bisogna vedere malati.

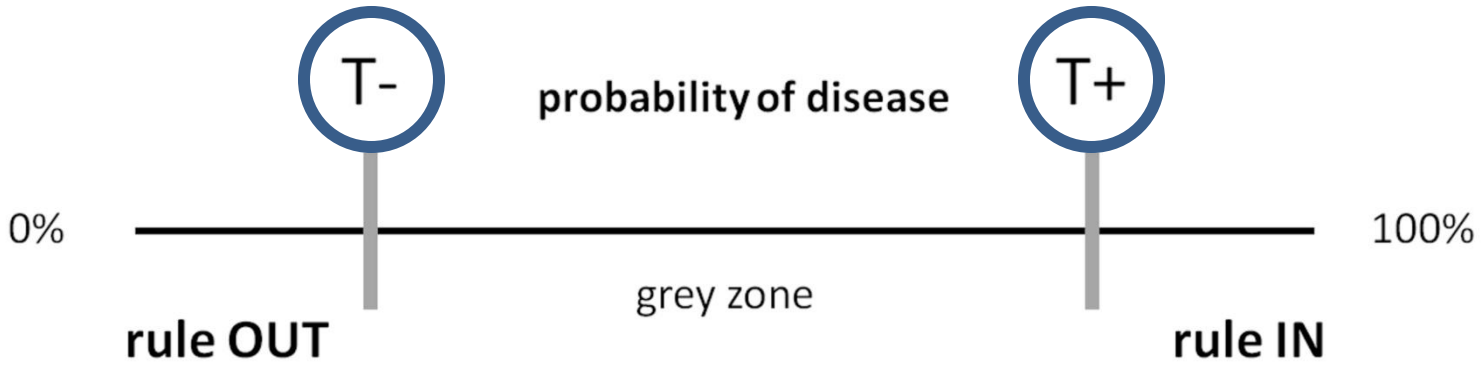
Bisogna studiare.

Diagnostic accuracy does not depend as much on stategy as ***on mastery of contents****.*

J.Kassirer

Melioidosi

Varcare quella **soglia**…



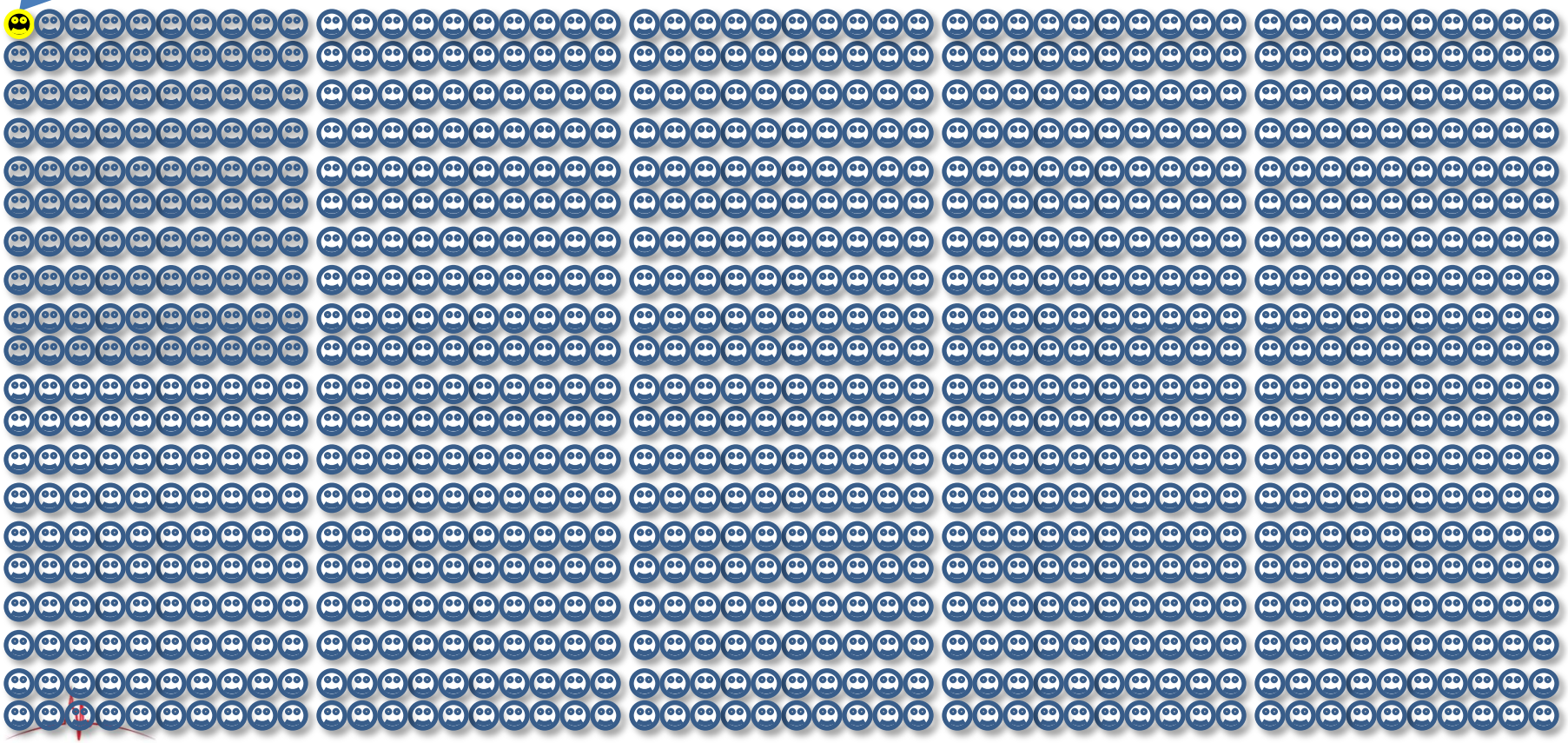
0.1%

95%

2%

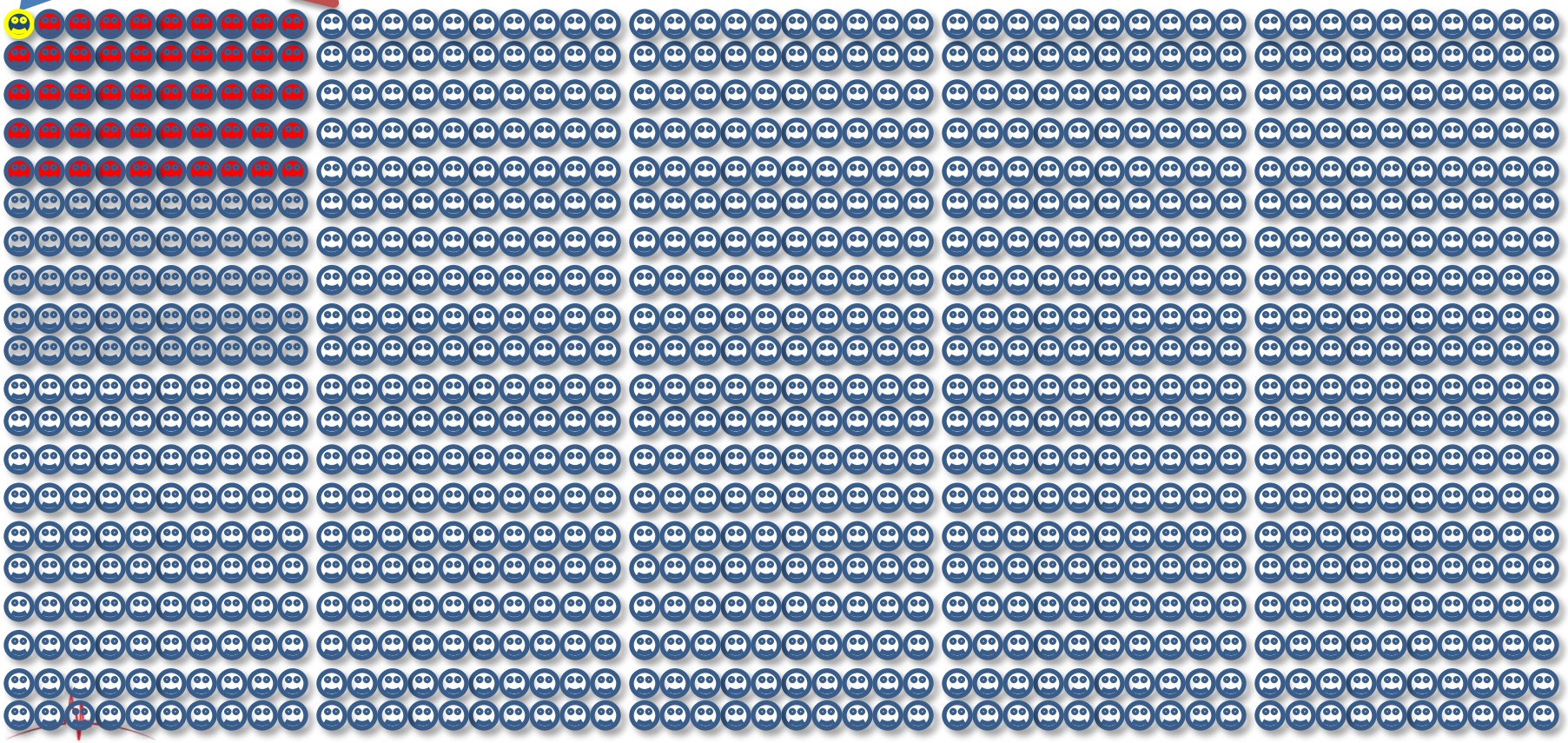
Poveri Bayes e Laplace

1 malato su 1000 = 0,1%



1 malato su 1000 = 0,1%

49 falsi positivi su 1000



With a very low prevalence even a very sensitive test might produce an **unacceptably high number of false positives.**

This is the great problem with **screening** that great hits the public imagination, sometimes even **against evident demonstrations of uselessness.**

Minchia, Intern Emerg Med. 2012 Oct;7 Suppl 3:S173-9.

Siamo esseri umani.

Ragioniamo (o dovremmo ragionare) come esseri umani.

Decidiamo in condizioni di incertezza.

Siamo pigri.

Dual Process Theory

Intuitivo

Analitico

Prendere le scorciatoie.

Energy saving brains.

Heuristics.

Strategie cognitive istintive.

Funzionano, e piuttosto bene. Ma non sempre.

Distorsioni del giudizio

Pregiudizi

Tra Bayes e bias

Avaliability (memorability)

Representativeness

Base rate neglect

Anchoring

Confirmatory bias

Overconfidence

Il contesto

Demonstrable biases in the medical setting

- Gender
- Education
- Race
- Ethnicity
- Obesity
- Psychiatric illness
- Age
- Socioeconomic status
- Sexual orientation
- Substance abuse disorders
- Chronic and complex illness

Crosskerry P, Nimmo GR J R Coll Physicians Edinb 2011; 41:155–62

I will not permit considerations of

age, ***disease*** or ***disability***, ***creed***, ***ethnic origin***,

gender, ***nationality***, ***race***, ***sexual orientation***,

or ***social standing***

to intervene between my duty and my patient.

WMA Declaration of Geneva 2006

Intolerance of error and culture

of blame drive medical excess

Hoffman JR BMJ 2014;349:g5702 (14 oct)

The medical culture of **shame** and **blame**, which can lead practitioners to deny and hide errors, has also fed the **pretension that modern medicine is based on perfected science**, which in turn implies that any error, and indeed any adverse outcome, represents unacceptable failure.

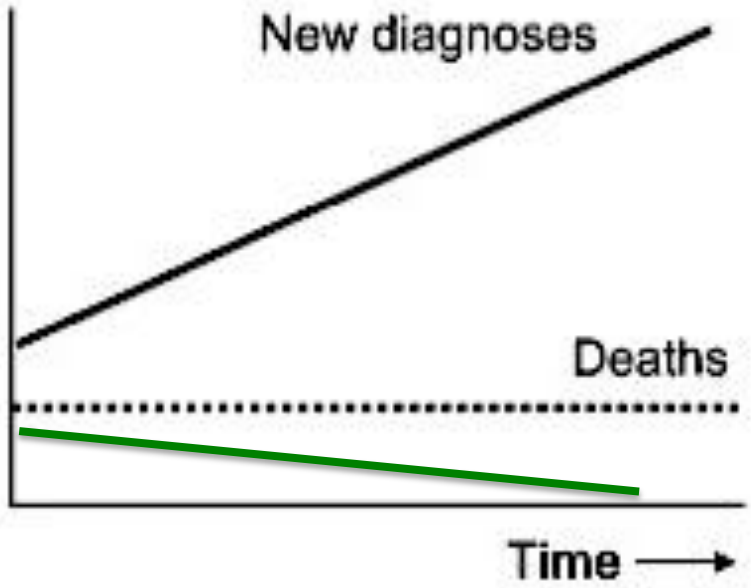
This pretension has also been sold to the public.

Hoffman JR BMJ 2014;349:g5702

Crediamo nelle narrazioni

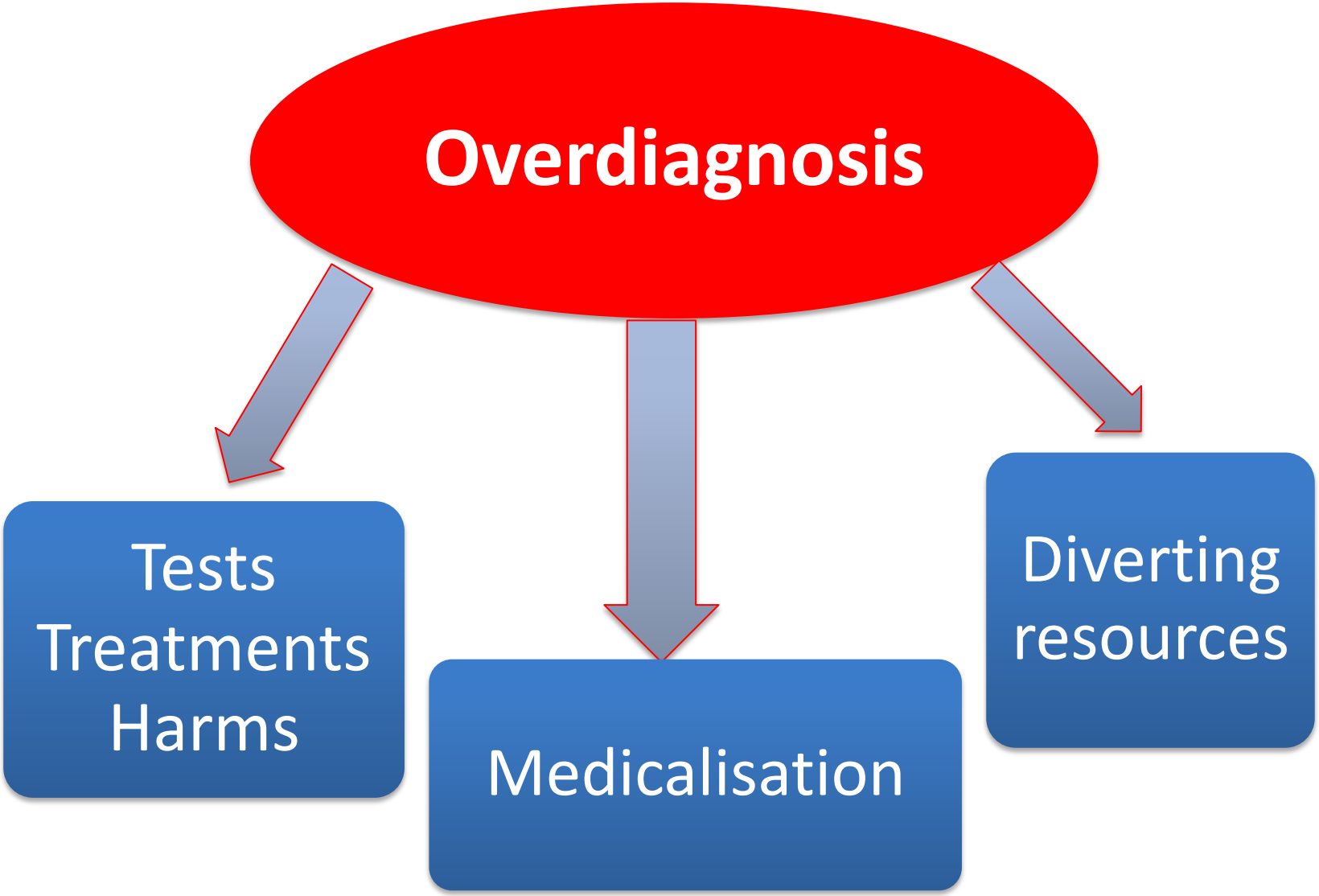
A zero tolerance for error and uncertainty drives the culture of overdiagnosis and overtreatment.

Hoffman JR BMJ 2014;349:g5702



overdiagnosis

Harming the healthy


Overdiagnosis
Tests
Treatments
Harms
Medicalisation
Diverting
resources

Overdiagnosis

Overtreatment

Conflitti di interesse

Illusioni di beneficio

Drivers of overdiagnosis

- Technological changes detecting ever **smaller "abnormalities"**

- Commercial and professional **vested interests**

- Conflicted panels producine **expanded disease definitions** and writing **guidelines**

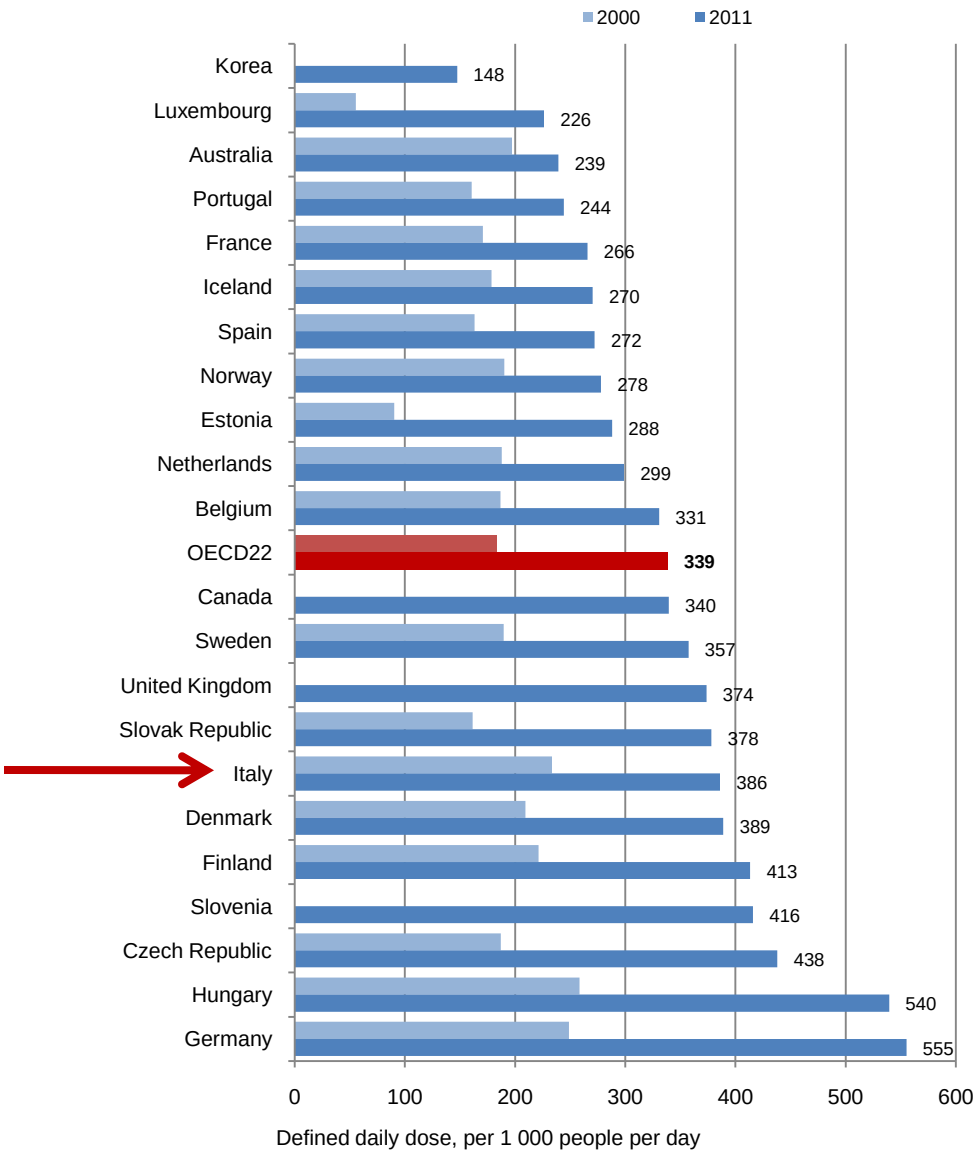
Different ways to expand disease definitions

Creating new categories of–**pre-disease**

Lowering diagnostic **thresholds**

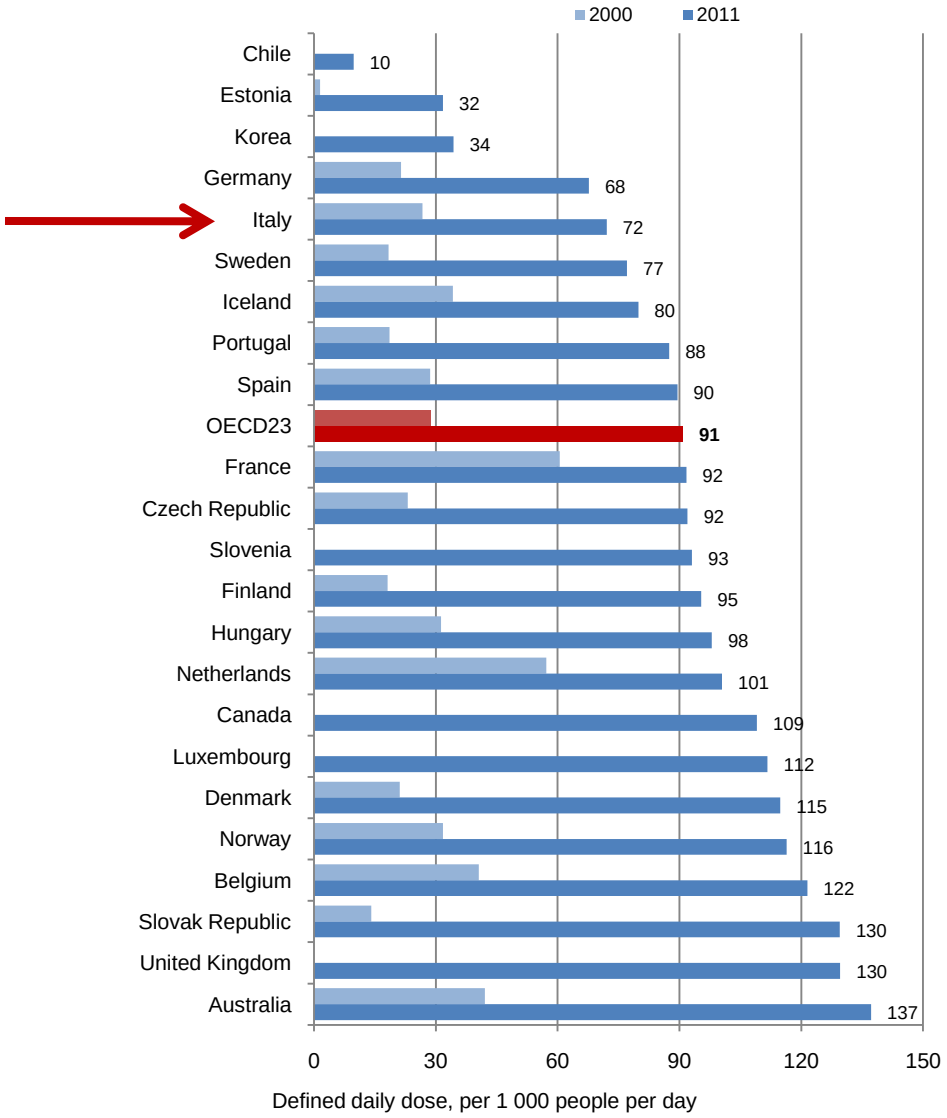
Earlier diagnosis, different diagnostic method

Hypertension drugs consumption, 2000 and 2011 (or nearest year)



From:
Health at a Glance: Europe 2012

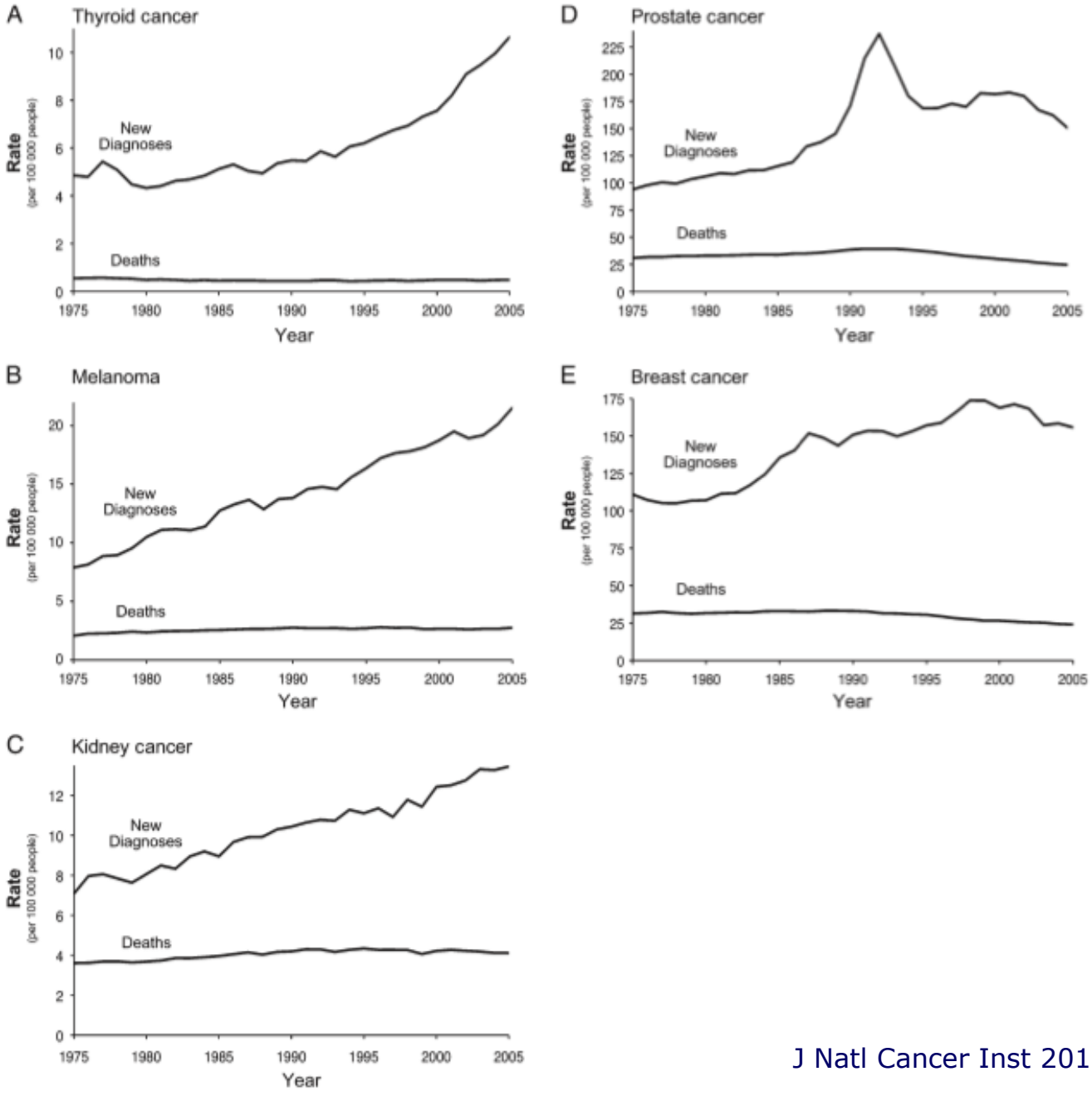
Anticholesterols consumption, 2000 and 2011 (or nearest year)



From:
Health at a Glance: Europe 2012

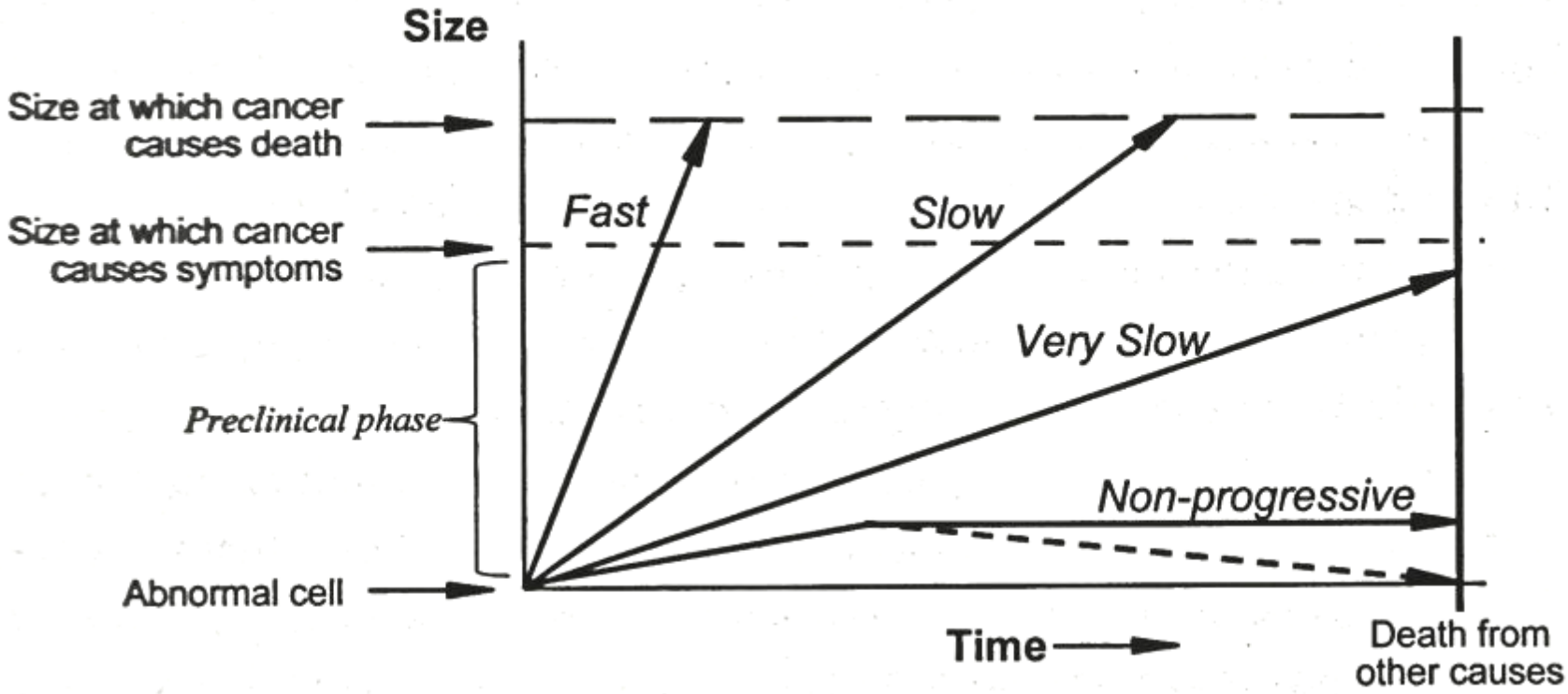
Exaggeration of benefits

and suppression of harms



J Natl Cancer Inst 2010;102:605–613

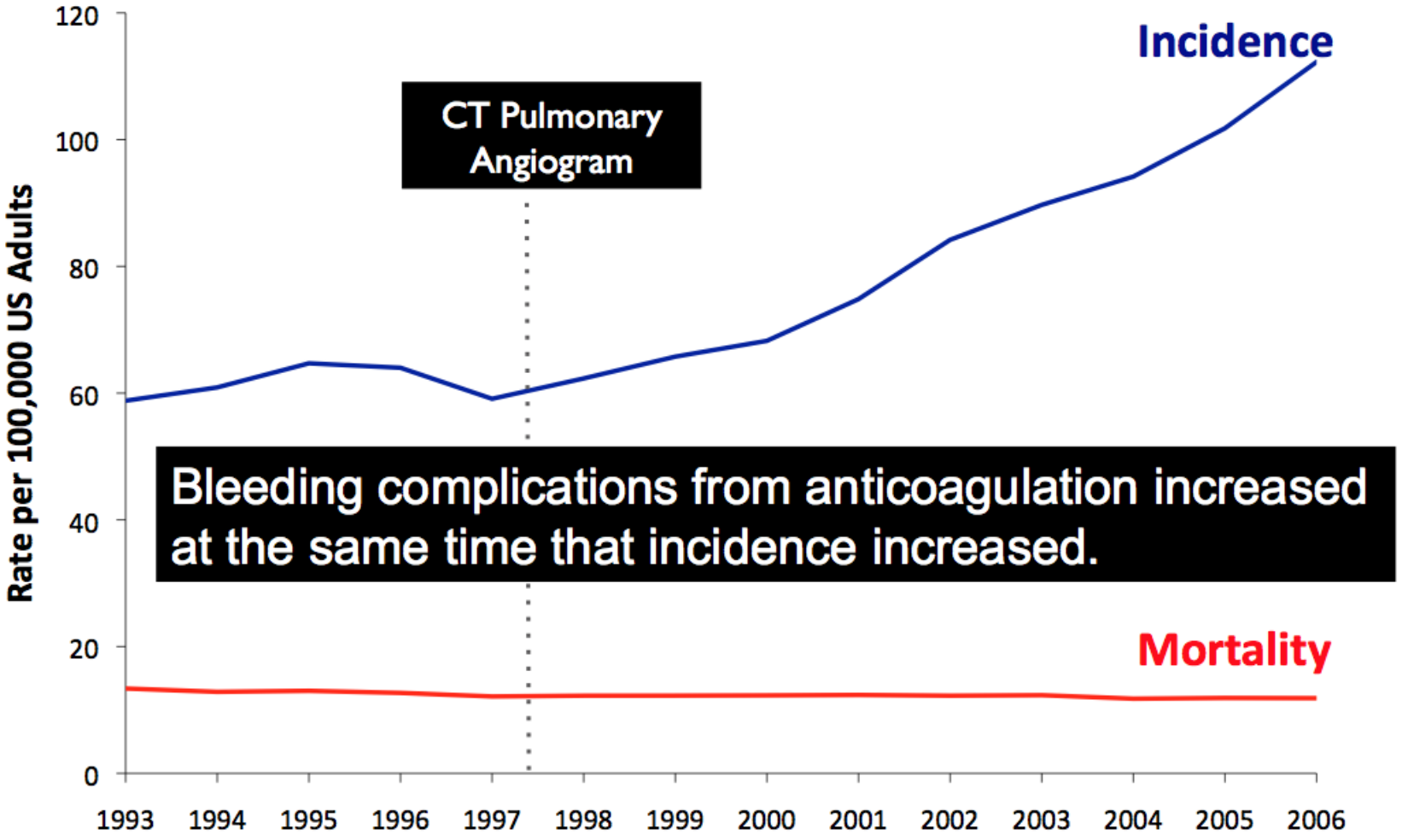
The Heterogeneity of Cancer Progression



J Natl Cancer Inst 2010;102:605–613

Diagnosis and treatment of pulmonary embolism: a metaphor for medicine in the evidence-based medicine era.

Prasad V Arch Intern Med. 2012; 172(12):955-958.



Weiner, Arch Intern Med 2012;307(22):2400-240

La diagnosi come strumento

"C'e` da congratularsi con lui per essere morto di una malattia tanto rara, ma più ancora per avere trovato medici capaci di riconoscerla e darle il suo vero nome."

Jan Potockj,
Manoscritto trovato a Saragozza

Clinicians and patients need to acknowledge the limits of medicine and embrace the uncertainty that lies beyond.

Only because we do not understand everything and because we cannot control the future is it possible to live.

Iona Heath, 2014