gisma gruppoitalianoscreening mammografico

OSSERVATORIO NAZIONALE SCREENING

Screening mammografico: conoscenza scientifica, controversie e incertezze

La comunicazione per una decisione consapevole

Torino 25 settembre 2013

SOVRADIAGNOSI: IMPLICAZIONI PER LA CLINICA E LA RICERCA

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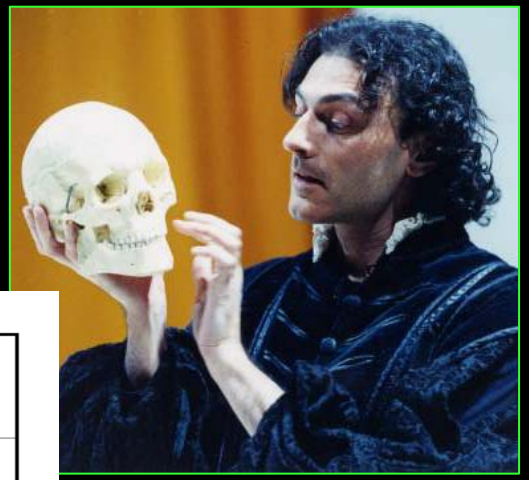
OVERDIAGNOSIS

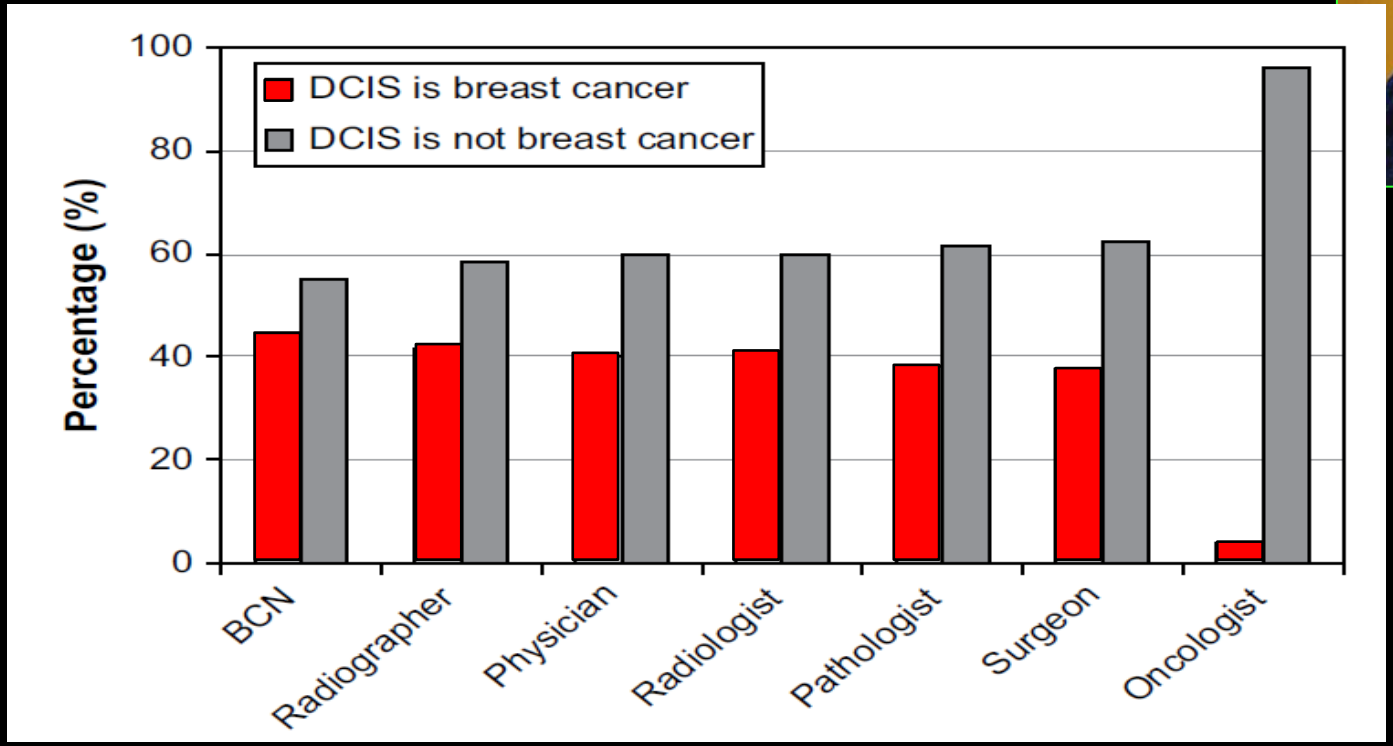
Information to...

- Medical students
- Physicians
- Residents in...
- Patients
- Participants to screening programs

QUESTIONS ON DCIS

1. Is DCIS a cancer ?





Kennedy et al, Breast 2009

QUESTIONS ON DCIS

2. Is it a non-invasive lesion OR a pre-invasive lesion ?

	1973-75	2005	
Incidence	1.87_{x10^5}	32.5_{x10^5}	(x17) *

From 5-10% to 20-25% of diagnosed BCs (x4-5)

Not only due to screening mammography

Most IDCs have a previous DCIS phase: 14-75% of DCIS progress to IDC **

While screening mammography detects many DCIS

IDC incidence did not decrease proportionally → DCIS overdiagnosis

** Virnig et al, JNCI Monogr 2010. **Leonard & Swain, JNCI 2004*

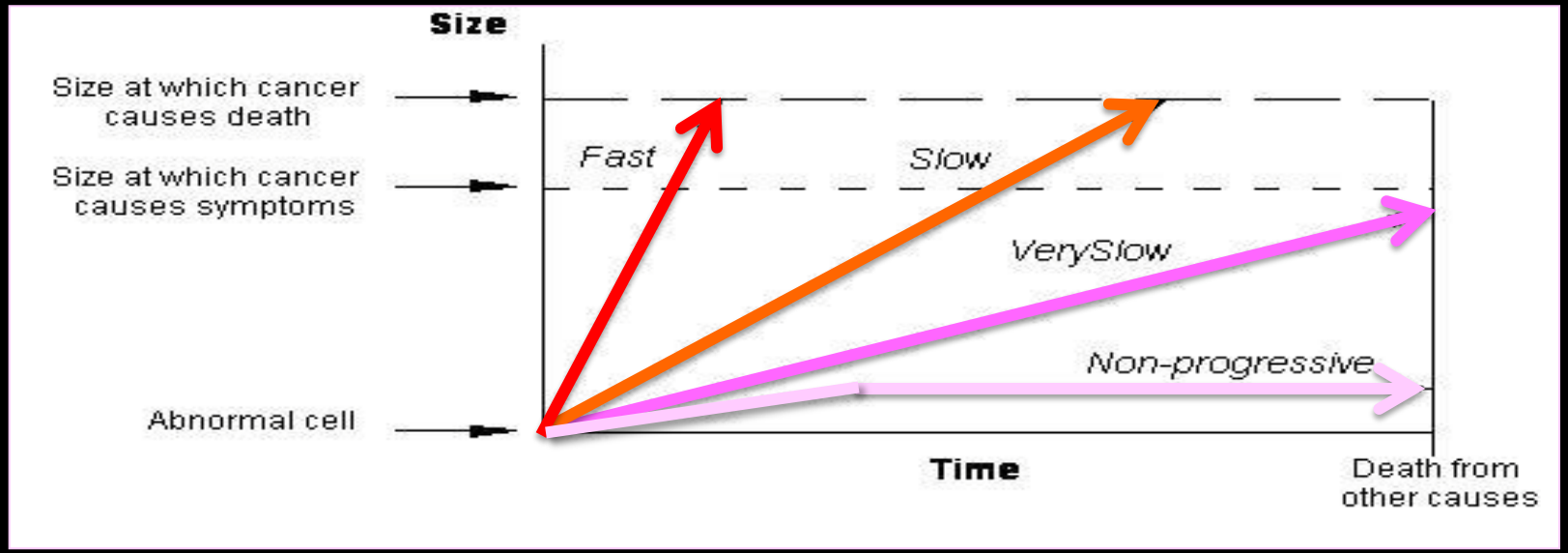
OVERDIAGNOSIS

WRONG To diagnose a disease more often than it actually occurs = TOO MANY FALSE POSITIVES = *The test has low specificity (and low PPV, depending on disease prevalence)*

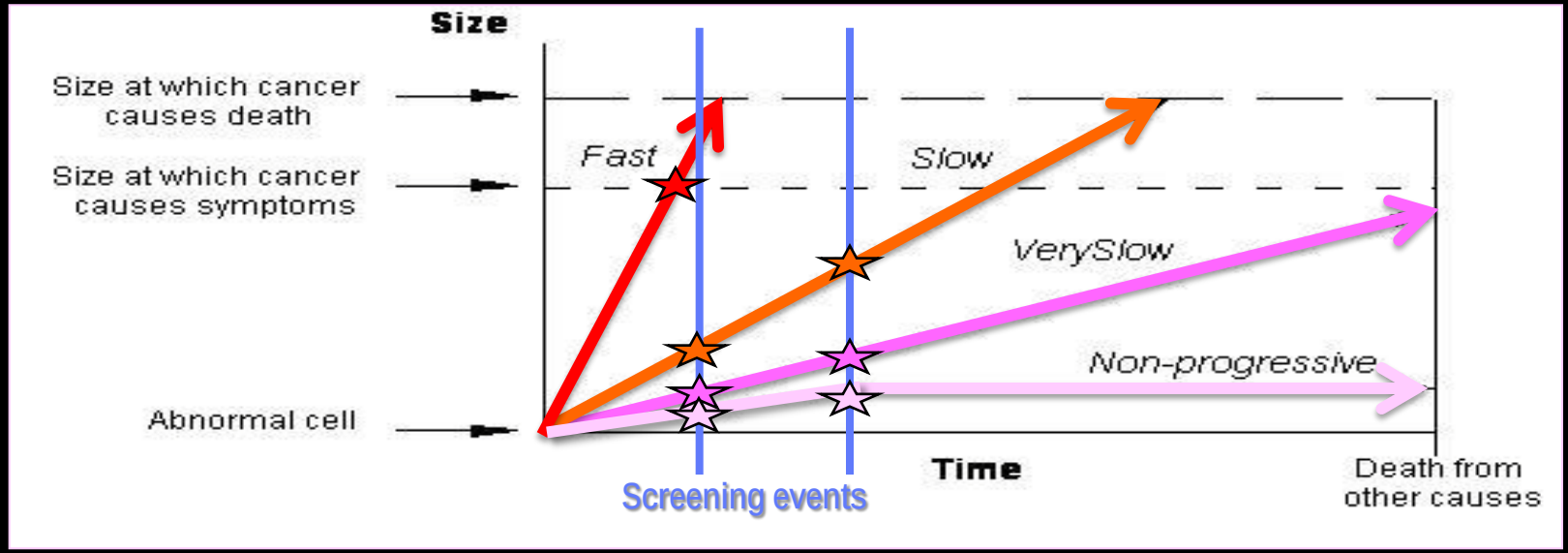
RIGHT To diagnose a disease (lesion) that would had not been diagnosed within the patient lifetime = **TOO MANY TRUE POSITIVES** = ***The test is too much sensitive (?!)***

OVERDIAGNOSIS

Detection of a disease (lesion) that will never cause symptoms or death during patient lifetime



SCREENING CASES

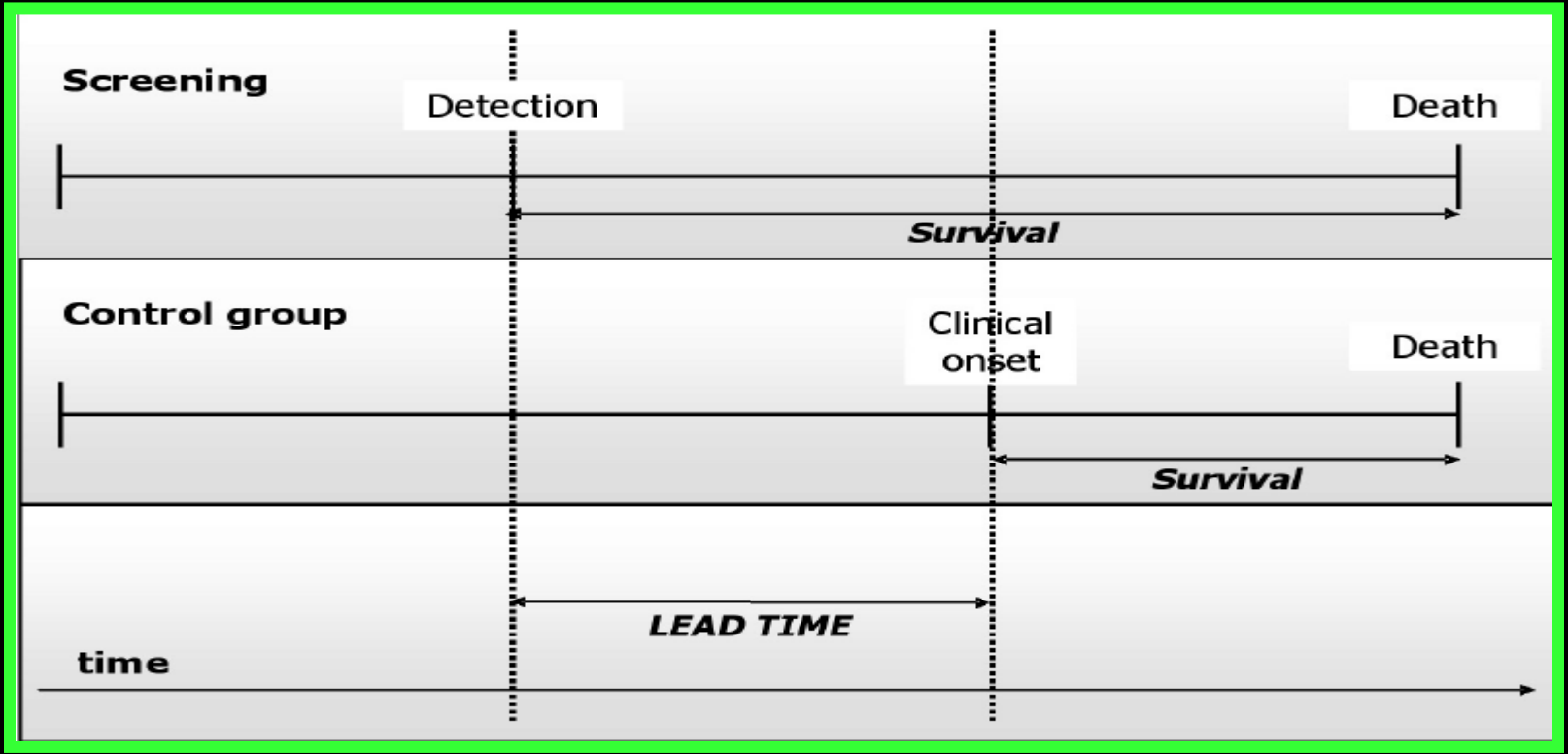


= Interval cancer

= Early (presymptomatic) diagnosis

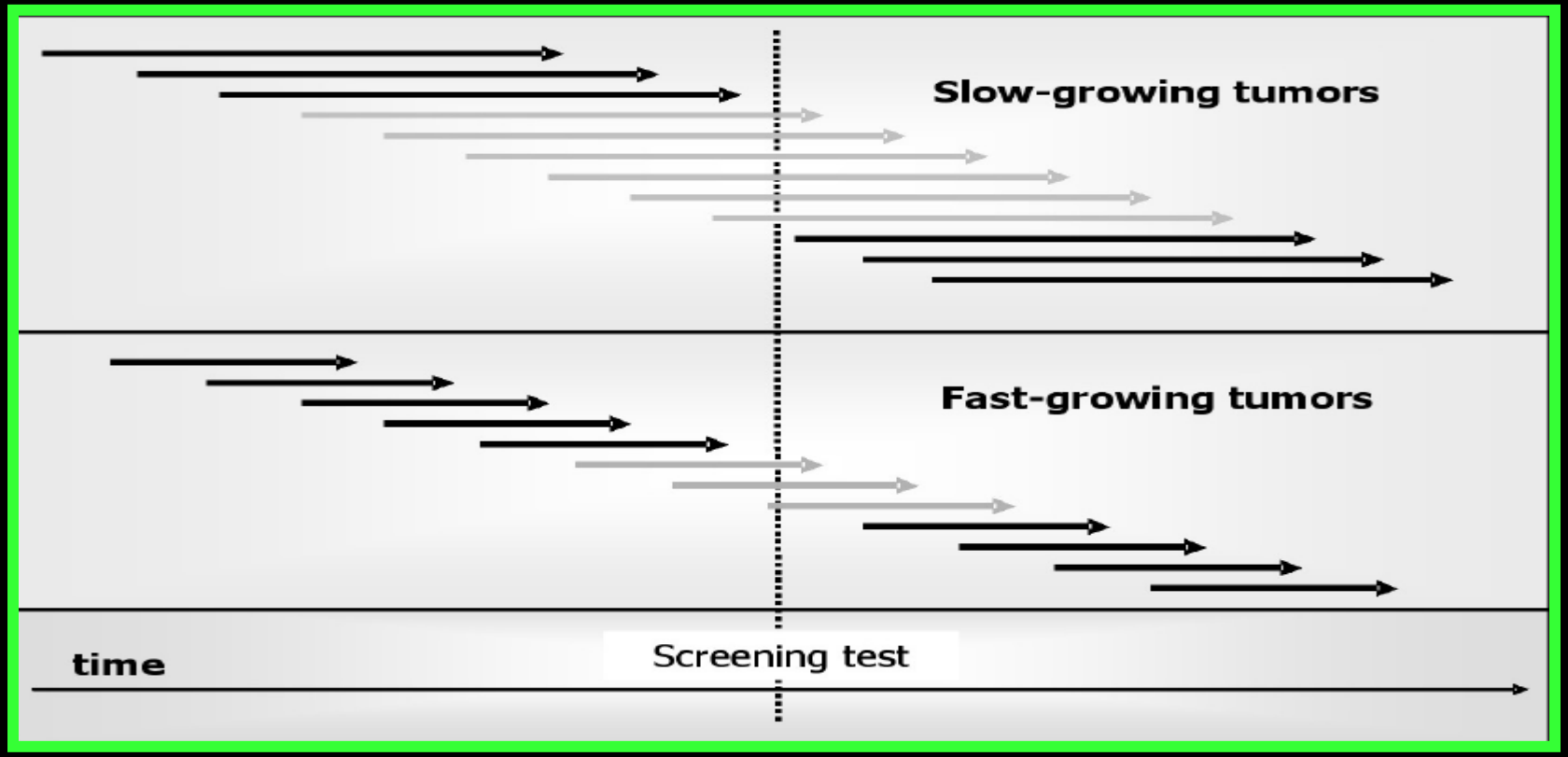
= Overdiagnosis

LEAD TIME BIAS



Sardanelli F, Di Leo G. Biostatistics for Radiologists. Springer 2009

LENGTH BIAS



Sardanelli F, Di Leo G. Biostatistics for Radiologists. Springer 2009

WHY RCTs FOR DEMONSTRATING SCREENING EFFECTIVENESS?

RCTs are the way to avoid overestimation of a screening effect due to lead time bias and length bias

OVERDIAGNOSIS IS AN EXTREME CASE OF LENGTH BIAS

When the growth of a screen-detected cancer is so slow

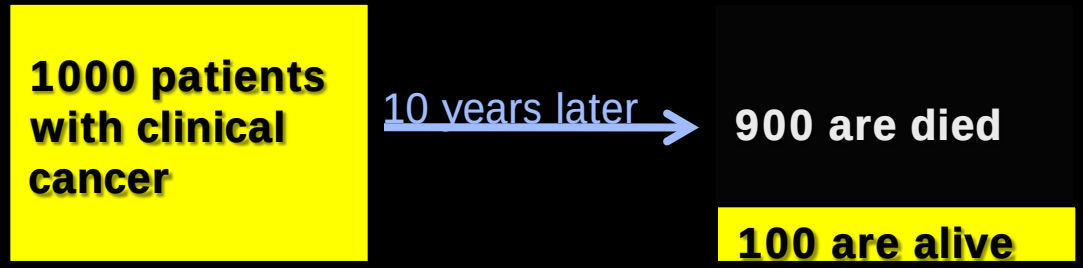
that the patient would have died before for other causes

It cannot be evaluated in an individual (treated !) patient

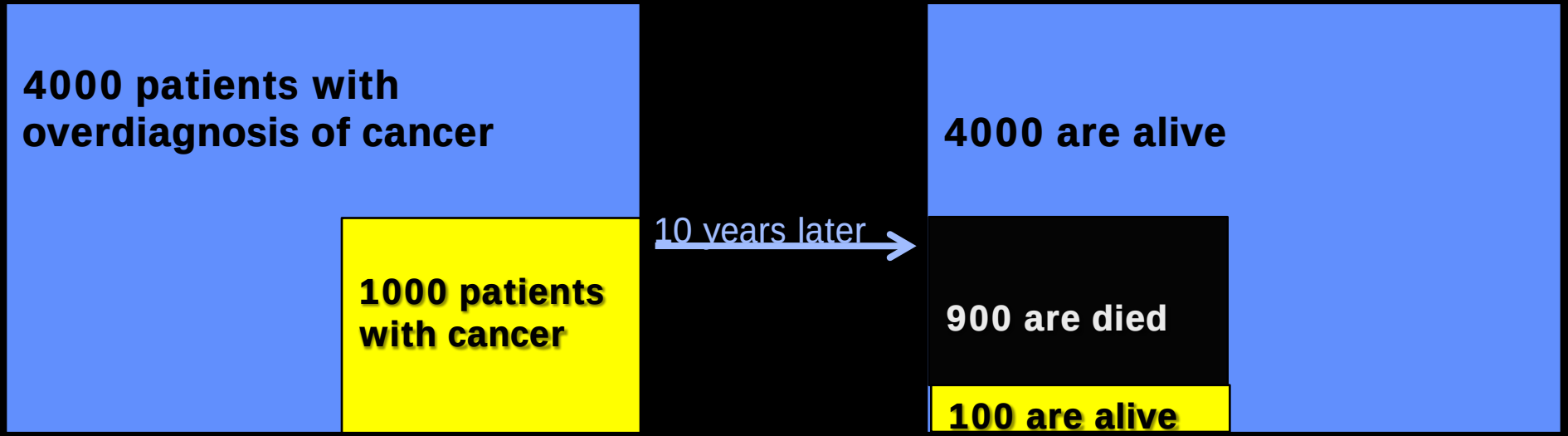
It can be demonstrated in populations:

- Rapidly rising rates of testing and disease diagnosis *in the setting of stable rate of specific mortality*
- RCT: persistent excess of cumulative disease incidence in the tested group years after the trial

WITHOUT SCREENING



WITH SCREENING



WITHOUT SCREENING

1000 patients

Survival = 100/1000 = 10%

100 are alive

WITH SCREENING

4000 patients with overdiagnosed cancer

4000 are alive

Survival = 4100/5000 = 82%

with breast cancer

900 are died

100 are alive

SCREENING DEBATE

Side-effects of breast screening:

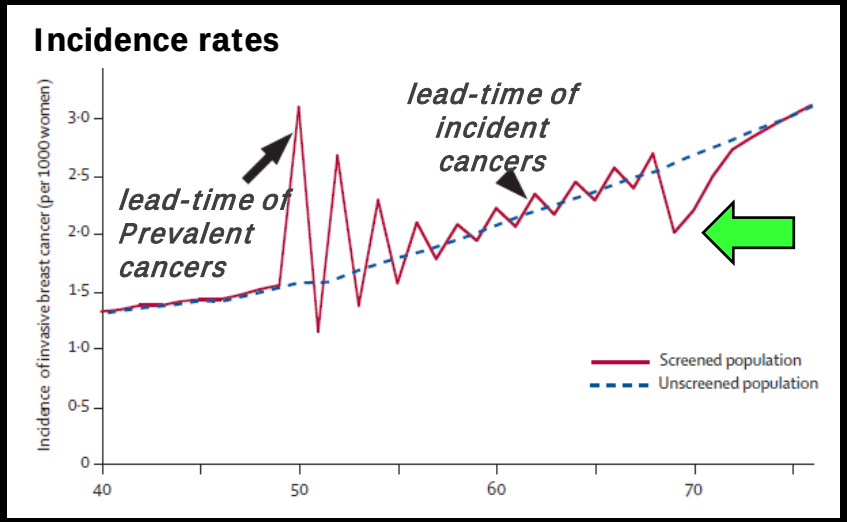
1. Anxiety from false positives
   - VPP1 (FP ⇒ recall and further imaging tests)
   - VPP2 (FP ⇒ needle biopsy)
2. Overdiagnosis (correct diagnosis of an irrelevant malignant disease)

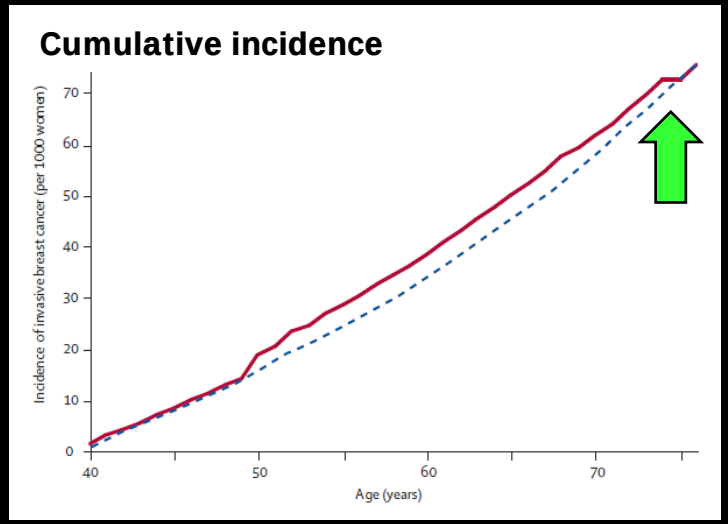
Overdiagnosis is more important than anxiety form FPs because it implies unnecessary treatment = OVERTREATMENT

However, **Overdiagnosis estimation is a challenging task**

- How many and which DCIS would evolve to invasive cancers?
- We need long-term follow-up (10-years are not enough)
- Different estimates:

NSW, Australia	30-42%	Morrell, 2010
Florence, Italy	10%	Puliti, 2009
Danmark	33%	Jørgensen, 2009
Meta-analysis	30%	Gøtzsche, 2009
Meta-analysys (incl. DCIS)	52%	Jørgensen, 2009
Meta-analysis, Italy	<5%	Paci, 2006

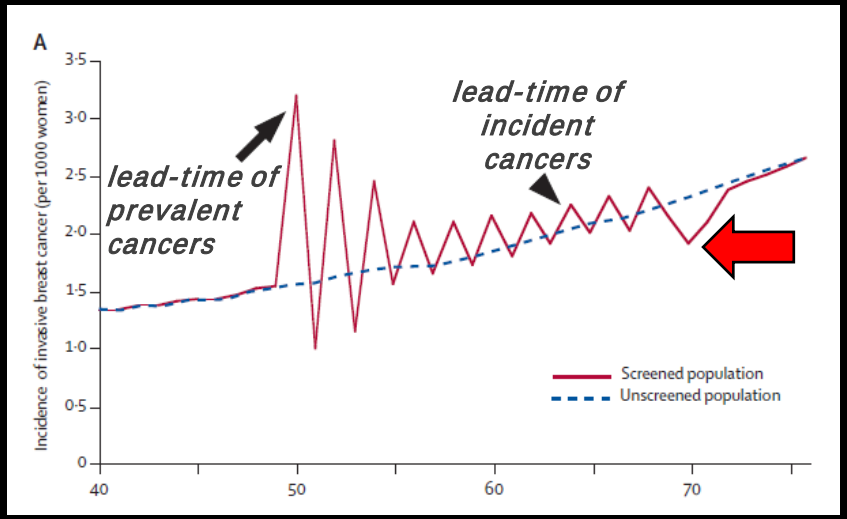


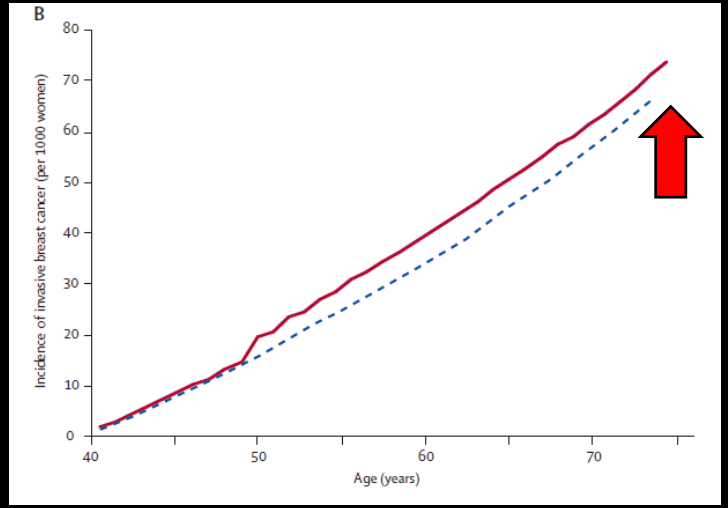


NO OVER-DIAGNOSIS

Biennial screening of women aged 50–68 years: incidence of invasive breast cancer (hypothetical data). All women underwent screening in the same year.

Biesheuvel et al. Lancet Oncol 2007





OVER-DIAGNOSIS

METHODOLOGICAL ISSUES AND BIASES AFFECTING ESTIMATES OF OVERDIAGNOSIS

Methodological issue or bias affecting estimates of overdetection	Method(s) affected	Effect on estimate of overdetection if not corrected	Optimum solution
Different breast-cancer risk in screened and unscreened population	Both	Estimate may be too high or too low	Breast cancer risk should be the same in screened and unscreened populations
Low participation in screening group and high participation in non-screening group	Both	Estimate too low	Participation in screened population should be high (>80%) and screening in unscreened population should be low (<20%)
Offering screening to the control group before or during follow-up	Both	Estimate too low	Control group should not be offered screening before or during long-term follow-up
Inappropriate adjustment for lead-time	Cumulative incidence	Estimate too high	Long follow-up after last screen (at least 5 years) or a statistical or numerical adjustment for lead-time
	Incidence rate	Estimate may be too high or too low	Initial screening rounds should be excluded and there should be a statistical or numerical adjustment for lead-time

Biesheuvel et al. Lancet Oncol 2007

HOW MUCH OVERDIAGNOSIS?

30% for invasive BCs and 50% and over for invasive + DCIS

OR

Invasive + DCIS 3-5%

????

Recent comprehensive review (Euroscreen Working Group 2012; Puliti 2012) counterchecked by European Network for Indicators on Cancer (EUNICE):

Overdiagnosis from service screening **<10%**

Overdiagnosis of invasive BCs +DCIS estimated to be **6.8%**

But: Digital mammography, tomosynthesis, screening US, MRI… ???

The benefits and harms of breast cancer screening: an independent review

*Independent UK Panel on Breast Cancer Screening**

Whether breast cancer screening does more harm than good has been debated extensively. The main questions are how large the benefit of screening is in terms of reduced breast cancer mortality and how substantial the harm is in terms of overdiagnosis, which is defined as cancers detected at screening that would not have otherwise become clinically apparent in the woman's lifetime. An independent Panel was convened to reach conclusions about the benefits and harms of breast screening on the basis of a review of published work and oral and written evidence presented by experts in the subject. To provide estimates of the level of benefits and harms, the Panel relied mainly on findings from randomised trials of breast cancer screening that compared women invited to screening with controls not invited, but also reviewed evidence from observational studies. The Panel focused on the UK setting, where women aged 50–70 years are invited to screening every 3 years. In this Review, we provide a summary of the full report on the Panel's findings and conclusions. In a meta-analysis of 11 randomised trials, the relative risk of breast cancer mortality for women invited to screening compared with controls was 0·80 (95% CI 0·73–0·89), which is a relative risk reduction of 20%. The Panel considered the internal biases in the trials and whether these trials, which were done a long time ago, were still relevant; they concluded that 20% was still a reasonable estimate of the relative risk reduction. The more reliable and recent observational studies generally produced larger estimates of benefit, but these studies might be biased. The best estimates of overdiagnosis are from three trials in which women in the control group were not invited to be screened at the end of the active trial period. In a meta-analysis, estimates of the excess incidence were 11% (95% CI 9–12) when expressed as a proportion of cancers diagnosed in the invited group in the long term, and 19% (15–23) when expressed as a proportion of the cancers diagnosed during the active screening period. Results from observational studies support the occurrence of overdiagnosis, but estimates of its magnitude are unreliable. The Panel concludes that screening reduces breast cancer mortality but that some overdiagnosis occurs. Since the estimates provided are from studies with many limitations and whose relevance to present-day screening programmes can be questioned, they have substantial uncertainty and should be regarded only as an approximate guide. If these figures are used directly, for every 10 000 UK women aged 50 years invited to screening for the next 20 years, 43 deaths from breast cancer would be prevented and 129 cases of breast cancer, invasive and non-invasive, would be overdiagnosed; that is one breast cancer death prevented for about every three overdiagnosed cases identified and treated. Of the roughly 307 000 women aged 50–52 years who are invited to begin screening every year, just over 1% would have an overdiagnosed cancer in the next 20 years. Evidence from a focus group organised by Cancer Research UK and attended by some members of the Panel showed that many women feel that accepting the offer of breast screening is worthwhile, which agrees with the results of previous similar studies. Information should be made available in a transparent and objective way to women invited to screening so that they can make informed decisions.

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See Online/Editorial
http://dx.doi.org/10.1016/S0140-6736(12)61775-9

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	Source	Point Estimate	95% CI
Mortality	11 RCTs	-20%	-11%, -27%
Long term Overdiagnosis	3 RCTs	11%	9%, 12%
Short term Overdiagnosis	3 RCTs	19%	15%, 23%

Marmot M, Lancet, Oct 30, 2012

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Effect of Three Decades of Screening Mammography on Breast-Cancer Incidence

Archie Bleyer, M.D., and H. Gilbert Welch, M.D., M.P.H.

ABSTRACT

BACKGROUND

To reduce mortality, screening must detect life-threatening disease at an earlier, more curable stage. Effective cancer-screening programs therefore both increase the incidence of cancer detected at an early stage and decrease the incidence of cancer presenting at a late stage.

METHODS

We used Surveillance, Epidemiology, and End Results data to examine trends from 1976 through 2008 in the incidence of early-stage breast cancer (ductal carcinoma in situ and localized disease) and late-stage breast cancer (regional and distant disease) among women 40 years of age or older.

RESULTS

The introduction of screening mammography in the United States has been associated with a doubling in the number of cases of early-stage breast cancer that are detected each year, from 112 to 234 cases per 100,000 women — an absolute increase of 122 cases per 100,000 women. Concomitantly, the rate at which women present with late-stage cancer has decreased by 8%, from 102 to 94 cases per 100,000 women — an absolute decrease of 8 cases per 100,000 women. With the assumption of a constant underlying disease burden, only 8 of the 122 additional early-stage cancers diagnosed were expected to progress to advanced disease. After excluding the transient excess incidence associated with hormone-replacement therapy and adjusting for trends in the incidence of breast cancer among women younger than 40 years of age, we estimated that breast cancer was overdiagnosed (i.e., tumors were detected on screening that would never have led to clinical symptoms) in 1.3 million U.S. women in the past 30 years. We estimated that in 2008, breast cancer was overdiagnosed in more than 70,000 women; this accounted for 31% of all breast cancers diagnosed.

CONCLUSIONS

Despite substantial increases in the number of cases of early-stage breast cancer detected, screening mammography has only marginally reduced the rate at which women present with advanced cancer. Although it is not certain which women have been affected, the imbalance suggests that there is substantial overdiagnosis, accounting for nearly a third of all newly diagnosed breast cancers, and that screening is having, at best, only a small effect on the rate of death from breast cancer.

From the Quality Department, St. Charles Health System, Central Oregon, and the Department of Radiation Medicine, Oregon Health and Science University, Portland (A.B.); the University of Texas Medical School at Houston, Houston (A.B.); and the Dartmouth Institute for Health Policy and Clinical Practice, Geisel School of Medicine at Dartmouth, Hanover, NH (H.G.W.). Address reprint requests to Dr. Bleyer at 2500 NE Neff Rd., Bend, OR 97701, or at ableyer@gmail.com.

N Engl J Med 2012;367:1998-2005.
DOI: 10.1056/NEJMoa1206809

BC diagnosis

Stage	Before Screen.	After Screen.	Delta
Early	112 /100,000	234/100,000	x2
Late	102/100,000	94/100,000	-8%

Overdiagnosis

Past 30 years = 1.3 million

2008 = 70,000 = 31% of all diagnosed BCs

Bleyer and Welch, NEJM, Nov 22, 2012

The New York Times

Assumed incidence increased by 0.25% per year.
Ignored 40 years of data showing increase for invasive cancer had been a steady 1.0% per year.

Had the authors looked at invasive cancers alone, and used a valid baseline for invasive cancers that increased by 1% per year from 1980 to 2008, they would have found 100/100,000 cases of invasive cancer in 1980, and would have predicted at least 132/100,000 by 2008. The authors also ignored lead time and prevalence screening of new women entering the screening pool, which should have kept invasive cancers well above 132/100,000.

This means that there were fewer invasive cancers in 2008 than would have been predicted had the incidence continued to increase at the expected rate of 1% per year from 1980-2008. Had they evaluated DCIS separately, and used a data-proven increase of 1% per year for invasive cancers, they would find that **their claims of overdiagnosis are greatly exaggerated.**

A reasonable discussion and even debate of both the benefits and risks of mammography is welcome, but **using "estimates" and "assumptions" in place of direct data to arrive at highly debatable conclusions that can have serious implications for tens of millions of women is suboptimal.** Conducting valid scientific evaluations is a task of enormous importance. Regarding an issue where so many lives are at stake, quality of life for many women so greatly affected, and confusion is so rampant, the analysis should be based on real data, not theoretical models based on poor assumptions and statistical manipulations.

We recommend that clinicians view the results of this study with extreme reserve.

Submitted to the NEJM

Society of Breast Imaging
Debra Monticciolo, MD, *President*

American Society of Breast Surgeons
Suzanne Klimberg, MD, *President*

American Society for Radiation Oncology
Michael Steinberg, MD, *Chairman*

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Senior Scientist, Imaging Research; Sunnybrook Research Institute
Professor, Depts. Medical Biophysics and Medical Imaging; University of Toronto
Director, Smarter Imaging Research Program; Ontario Institute for Cancer Research

Insights Imaging (2012) 3:7–10
DOI 10.1007/s13244-011-0127-y

STATEMENT

Mammography: EUSOBI recommendations for women's information

Francesco Sardanelli · Thomas H. Helbich ·
for the European Society of Breast Imaging (EUSOBI)

Overdiagnosis

Not all the breast cancers diagnosed with screening are aggressive and fatal cancers. In the absence of screening mammography, some of them (probably 5–20%) would have remained totally free of symptoms [10]. However, these cancers cannot be distinguished from those that, if left undiagnosed and untreated, would be fatal. Thus, if we want to reduce breast cancer mortality, we must accept a rate of overdiagnosed cancers with the consequence of a rate of unnecessary treatments.

OVERDIAGNOSIS

OVERTREATMENT

High-Risk Breast Lesions at Imaging-Guided Needle Biopsy: Usefulness of MRI for Treatment Decision

Viviana Londero[1]
Chiara Zuiani[1]
Anna Linda[1]
Rossano Girometti[1]
Massimo Bazzocchi[1]
Francesco Sardanelli[2]

OBJECTIVE. The purpose of this study is to evaluate the role of MRI for characterization of high-risk breast lesions diagnosed at imaging-guided needle biopsy.

MATERIALS AND METHODS. In this retrospective analysis of 220 patients, 227 high-risk lesions (94 papillomas, 64 radial sclerosing lesions, 46 lobular neoplasias, and 23 atypical ductal hyperplasias) found at 11-gauge vacuum-assisted or 14-gauge needle biopsy were studied with dynamic MRI (time resolution, 84 or 88 seconds; gadopentetate dimeglumine or gadobenate dimeglumine, 0.1 mmol/kg). When lesions showed contrast enhancement on subtracted images, they were considered suspicious for malignancy. The reference standard was histopathologic examination after surgical excision in 190 of 227 (84%) lesions and negative follow-up (≥ 24 months) in 37 of 227 (16%) lesions. Predictive values and likelihood ratios were calculated.

RESULTS. Of 227 lesions, 155 (68%) were contrast enhancing and 72 (32%) were not. Of 155 contrast-enhancing lesions, 28 (18%) were upgraded to malignancy after surgical excision (nine papillomas, one radial sclerosing lesion, 11 lobular neoplasias, and seven atypical ductal hyperplasias); there were 11 invasive carcinomas and 17 ductal carcinomas in situ, four of the latter being G3. Of 72 non–contrast-enhancing lesions, two (3%) were upgraded to malignancy after surgical excision (one radial sclerosing lesion and one lobular neoplasia), both of which were G1 ductal carcinoma in situ. Cancer probability was significantly higher for contrast-enhancing (18%) than for non–contrast-enhancing (3%) lesions ($p = 0.001$) and for nonmasslike (43%) than for masslike (14%) lesions ($p = 0.005$). The positive predictive value was 18% (28/155; 95% CI, 13–24%), the negative predictive value was 97% (70/72; 95% CI, 94–99%), the positive likelihood ratio was 1.448 (95% CI, 1.172–1.788), and the negative likelihood ratio was 0.188 (95% CI, 0.152–0.232).

CONCLUSION. The absence of enhancement at dynamic MRI allowed reliable exclusion of invasive cancers among high-risk lesions diagnosed at needle biopsy.

Keywords: breast cancer, contrast-enhanced MRI, core needle biopsy, high-risk breast lesions, vacuum-assisted biopsy

DOI:10.2214/AJR.11.7869

Received August 29, 2011; accepted after revision December 16, 2011.

TABLE 3: Probability of Malignancy of 227 High-Risk Lesions Diagnosed at Imaging-Guided Needle Biopsy According to the Presence or Absence of Contrast Enhancement at MRI and Lesion Type

Histopathology at Needle Biopsy	No. of Lesions	Benign or High Risk at Final Histopathology or Negative Follow-Up	Malignant at Final Histopathology	*p*
Papilloma				0.597
Contrast enhancing	82	73 (89)	9 (11)	
Non–contrast enhancing	12	12 (100)	0 (0)	
Radial sclerosing lesions				1.000
Contrast enhancing	33	32 (97)	1 (3)	
Non–contrast enhancing	31	30 (97)	1 (3)	
Lobular neoplasia				0.001
Contrast enhancing	24	13 (54)	11 (46)	
Non–contrast enhancing	22	21 (95)	1 (5)	
Atypical ductal hyperplasia				0.057
Contrast enhancing	16	9 (56)	7 (44)	
Non–contrast enhancing	7	7 (100)	0 (0)	
Overall				0.001
Contrast enhancing	155	127 (82)	28 (18)	
Non–contrast enhancing	72	70 (97)	2 (3)	

Note—Data are no. (%) of lesions.

FNs:
2 DCIS G1

CONCLUSION. The absence of enhancement at dynamic MRI allowed reliable exclusion of invasive cancers among high-risk lesions diagnosed at needle biopsy.

AJR, Sept 2013

Malignant Incidental Extracardiac Findings on Cardiac CT: Systematic Review and Meta-A

Nicola Flor[1]
Giovanni Di Leo[2]
Silvia Amaryllis Claudia Squarza[3]
Silvia Tresoldi[1]
Eliana Rulli[4]
Gianpaolo Cornalba[1,5]
Francesco Sardanelli[2,6]

OBJECTIVE. The objective of our study was t
dental extracardiac findings on cardiac CT with a f

MATERIALS AND METHODS. A systen
BASE, Cochrane databases) for studies reporting
CT. Among 1099 articles initially found, 15 studi
of those articles were hand-searched and 14 additi
the full text, 10 articles were excluded. Nineteen s
were analyzed. A three-level analysis was perfor
with incidental extracardiac findings, the prevale
cardiac findings, and the prevalence of patients w
plored for multiple variables. Pooled prevalence a

RESULTS. The prevalence of both incidental
extracardiac findings showed a high heterogenei
44% (95% CI, 35–54%) and 16% (95% CI, 14–20
variables were found for using or not using contr
design ($I^2 > 85\%$). The pooled cancer prevalence
0.7% (95% CI, 0.5–1.0%), with an almost perfec
malignancies, 21 (72%) were lung cancers; three
liver cancers; and one, mediastinal lymphoma.

CONCLUSION. Although the prevalence
at cardiac CT was highly variable, a homogenec
lignancies was reported across the studies, for a
these previously unknown malignancies were lun
CT require careful evaluation and reporting.

Keywords: cardiac CT, incidental extracardiac findings, meta-analysis, systematic review

DOI:10.2214/AJR.12.10306

Received November 14, 2012; accepted after revision January 1, 2013.

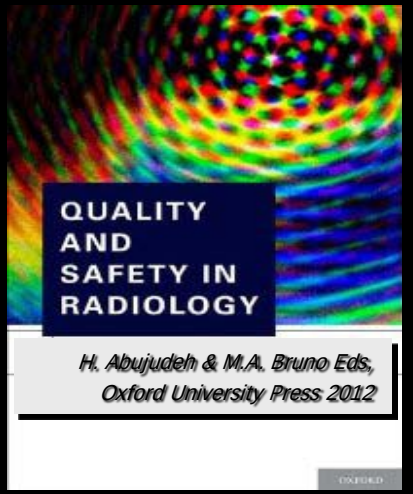
[1]Unità Operativa di Radiologia Diagnostica e Interventistica, Azienda Ospedaliera San Paolo, Milan, Italy.

From an epidemiologic and clinical point of view, our results pointed out that performing cardiac CT implies a nonnegligible probability to diagnose a previously unknown cancer, which can be compared with that observed in recent CT trials for lung cancer screening, ranging from 0.3% to 2.7%, depending on population characteristics such as age, sex, and smoking history [28, 29]. A 0.7% prevalence was expected considering that risk factors for lung cancer (72% of the prevalent malignancies) also act for coronary artery disease [30, 31]. Thus, referring physicians, patients, radiologists, cardiologists, and cardiac surgeons should be aware that when cardiac CT is performed, a collateral screening for extracardiac malignancies, mostly lung cancers, is being performed as well.

27

Evidence-based Radiology and Its Relationship with Quality

FRANCESCO SARDANELLI



We cannot achieve early diagnoses without a percentage of overdiagnosis.

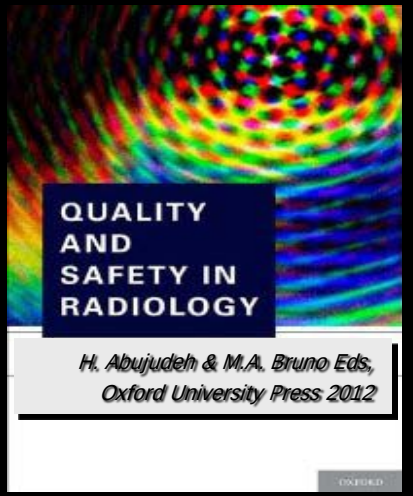
Up to now, **no method**, including advanced molecular gene profiling of tumor cells, is available **to stratify malignant lesions (including breast G1 DCIS)** into those to be treated and those not to treat.

Thus, when we find a small cancer, we are compelled to treat it. As a logical consequence, **overdiagnosis causes *overtreatment.*** In those overdiagnosed cases, any treatment is overtreatment.

27

Evidence-based Radiology and Its Relationship with Quality

FRANCESCO SARDANELLI



The challenge is to minimize the treatment. Interventional radiology can do the job of minimizing biological and economic costs.

A spectrum of tools (radiofrequency ablation, focused US, lasertherapy, cryotherapy) under the guidance of various imaging techniques is avalable

This perspective needs to be backed by high- quality research, in particular RCTs comparing imaging- guided interventional procedures with standard surgical interventions for asymptomatic small tumors.

RFA

Firstly introduced for liver

Now: adrenal, bone, lung, breast, prostate

Specialized RFA needle under

US-guidance (15-30')

Heating $\Rightarrow$ Coagulative necrosis

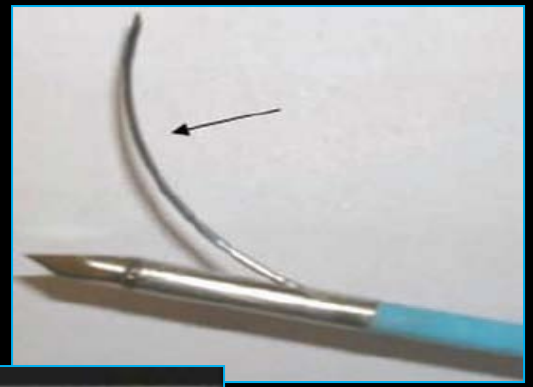
US monitoring (acustic impedance $\uparrow$)

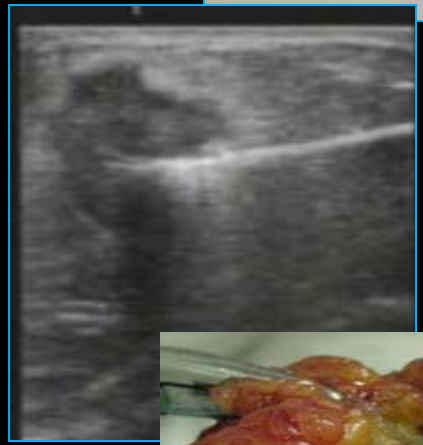
Generally treated tumors <1.5 cm

Complete ablation 86-96%

Side effect: skin burning (ice pack)

CE-MRI to predict tumor ablation





An RFA Study

52 pts (37-83 yo); mean T 1.3 (0.5-2.0) cm

42 IDC, 7 DCIS, 2 ILC, 1 TUB

SNB (N- 43, 83%)

5% glucose injection (skin protection)

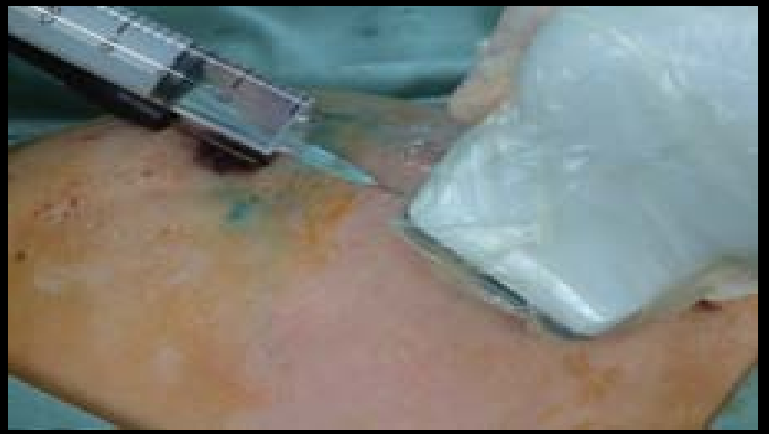
Areolar approach – Single session

Post-RFA FNAC (all negative)

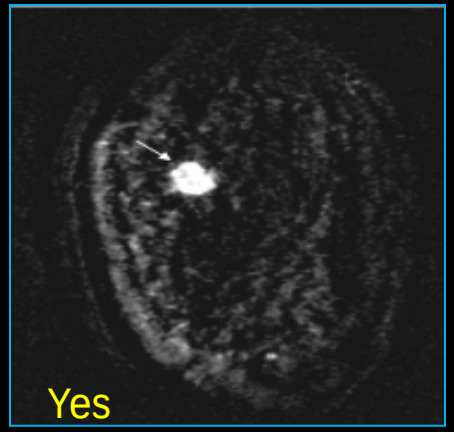
CT and/or endocrine therapy + RT (50Gy)

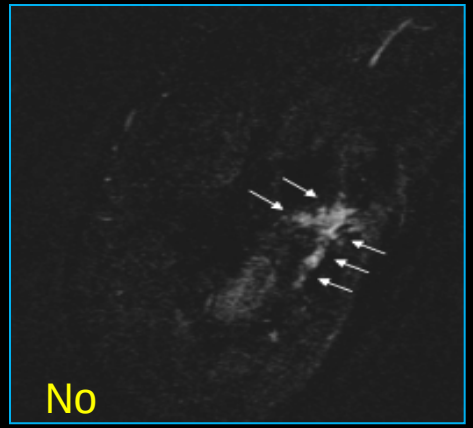
CE-MRI before and at months 1 and 3

No local recurrence at 15 months (6-30)

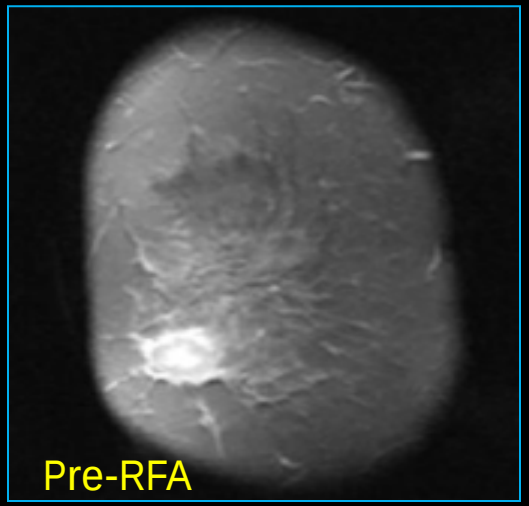


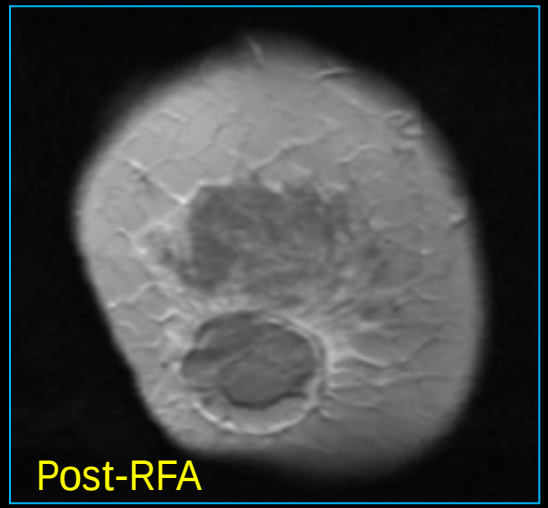
Oura et al, Breast Cancer 2007





Exclusion: Extensive Intraductal Component at mammography, US, and CE-MRI

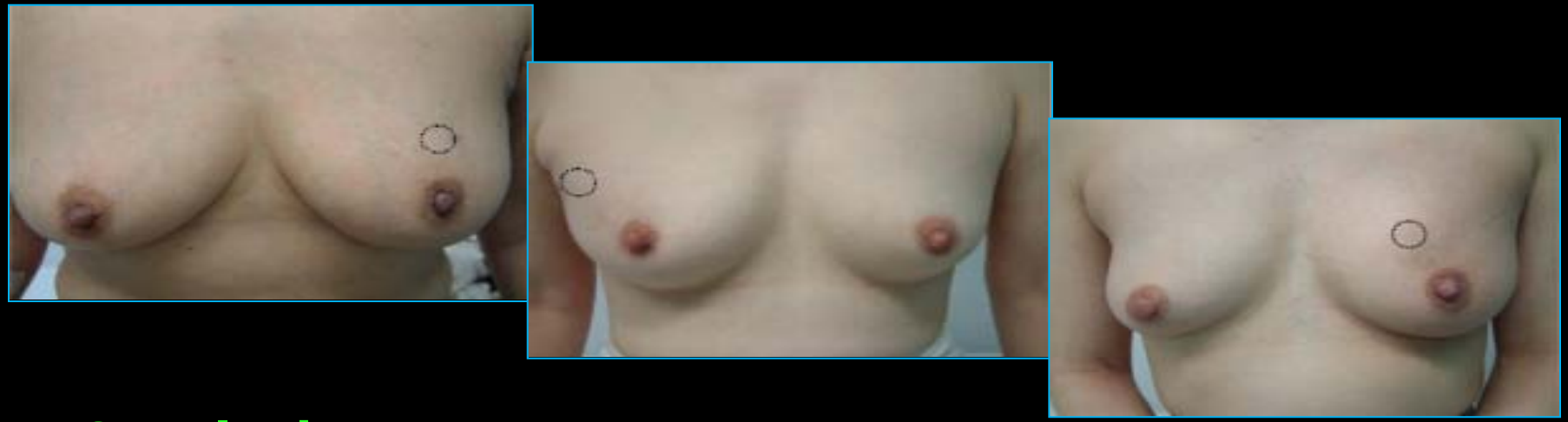




CE-MRI before and after RFA

Oura et al, Breast Cancer 2007

Cosmetics: excellent 83%, good 12%, fair 6%



Conclusions

Safe and good local disease control

Promising alternative to BCS for small BCs

Large scale RCTs and longer follow-up

Oura et al, Breast Cancer 2007

The Rome Study

34 post-menopausal pts. with IDC ≤2 cm

97% no evidence of viable tumoral cells

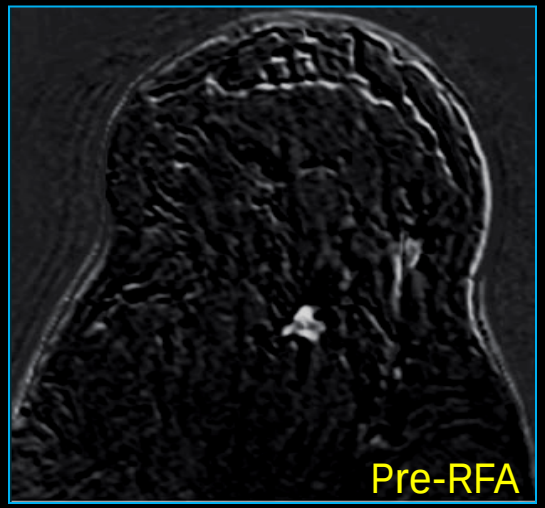
Ablation Lesion Diameters and Volumes according to Breast Tissue Pattern

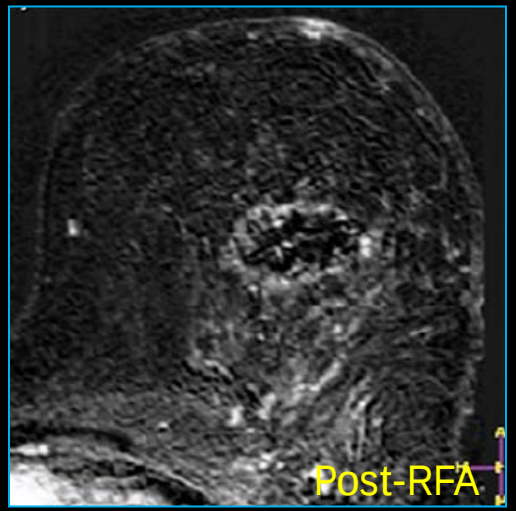
Breast Tissue Pattern	Largest Diameter (cm)	Middle Diameter (cm)	Smallest Diameter (cm)	Preablation Tumor Volume (cm^3)	Ablation Volume (cm^3)*	ΔV†
Dense	3.1 ± 0.7	2.9 ± .0.5	2.7 ± .0.3	7.6 ± 0.3	12.40 ± 0.71	63
Adipose	2.9 ± 0.6	2.7 ± 0.7	2.5 ± 0.4	6.9 ± 0.2	12.20 ± 0.58	77
Mixed	3.2 ± 0.5	3.1 ± 0.8	2.4 ± 1.6	7.2 ± 0.7	12.35 ± 0.98	71

Note.—Unless otherwise specified, data are means ± standard deviations.

* Ablation volumes were significantly larger than preablation tumor volumes ($P < .05$).

† The percentage of lesion volume increment of the ablation lesion over the original tumor volume.



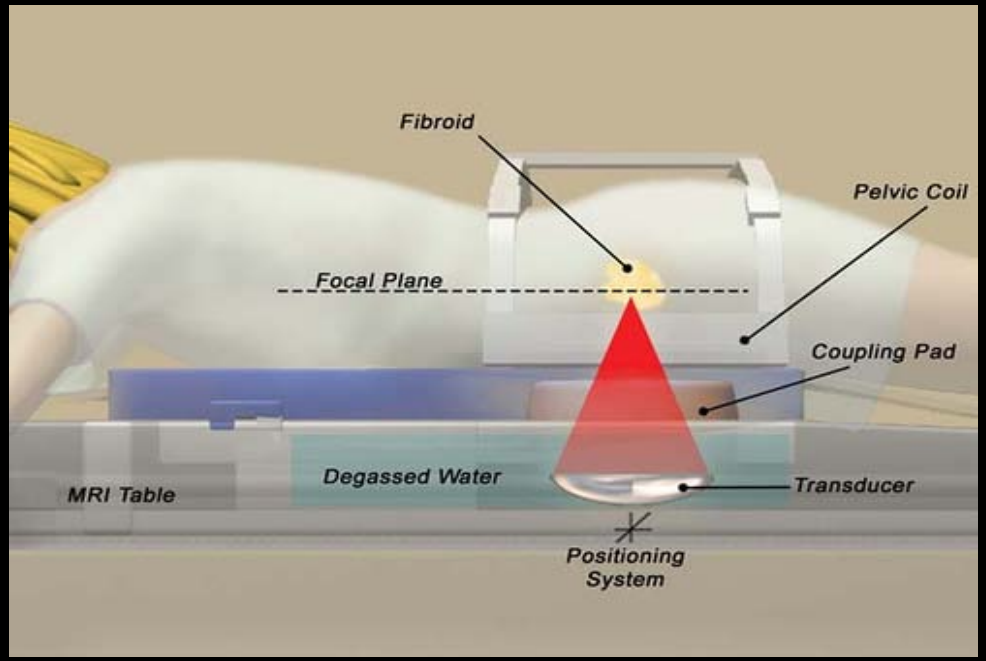


3T MRI

Excellent cosmesis in 28/34 (82%)

Manenti et al, Radiology 2009

RMg-FUS



Furusawa H, Namba K, Nakahara H, et al. The evolving non-surgical ablation of breast cancer: MR guided focused ultrasound (MRgFUS). Breast Cancer. 2007;14(1):55-8.

CHANGING VIEWPOINT

Scenario	Women	Target(s)	Measure(s)
Clinical breast imaging	Symptomatic	1. The highest sensitivity and NPV	1. False negative rate
Screening (old)	Asymptomatic	1. High sensitivity 2. Acceptable specificity and PPV	1. Proportional incidence of interval cancers 2. Recall rate
Screening (new)	Asymptomatic	1. High sensitivity 2. Acceptable specificity and PPV **3. Reducing overdiagnosis** **4. Reducing overtreatment**	1. Proportional incidence of interval cancers 2. Recall rate *3. Reducing incidence of invasive cancers (?)* *4. Reduced aggressiveness of treatment (no treatment for G1 DCIS, avoiding RT… , percutaneous treatments …)*

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OSSERVATORIO NAZIONALE SCREENING

Torino 25 settembre 2013

Screening mammografico: conoscenza scientifica, controversie e incertezze

La comunicazione per una decisione consapevole

THANK YOU !

EUROPEAN INSTITUTE FOR BIOMEDICAL IMAGING RESEARCH

EUSOBI european society of breast imaging

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