



# RASTREAMENTO DO CANCER DE MAMA

ULTRASSONOGRAFIA

RODRIGO GREGÓRIO BRANDÃO  
MASTOLOGISTA - EPM UNIFESP  
MESTRE E DOUTORANDO - EPM UNIFESP

SUS







Sociedades Médicas  
Pesquisadores Médicos



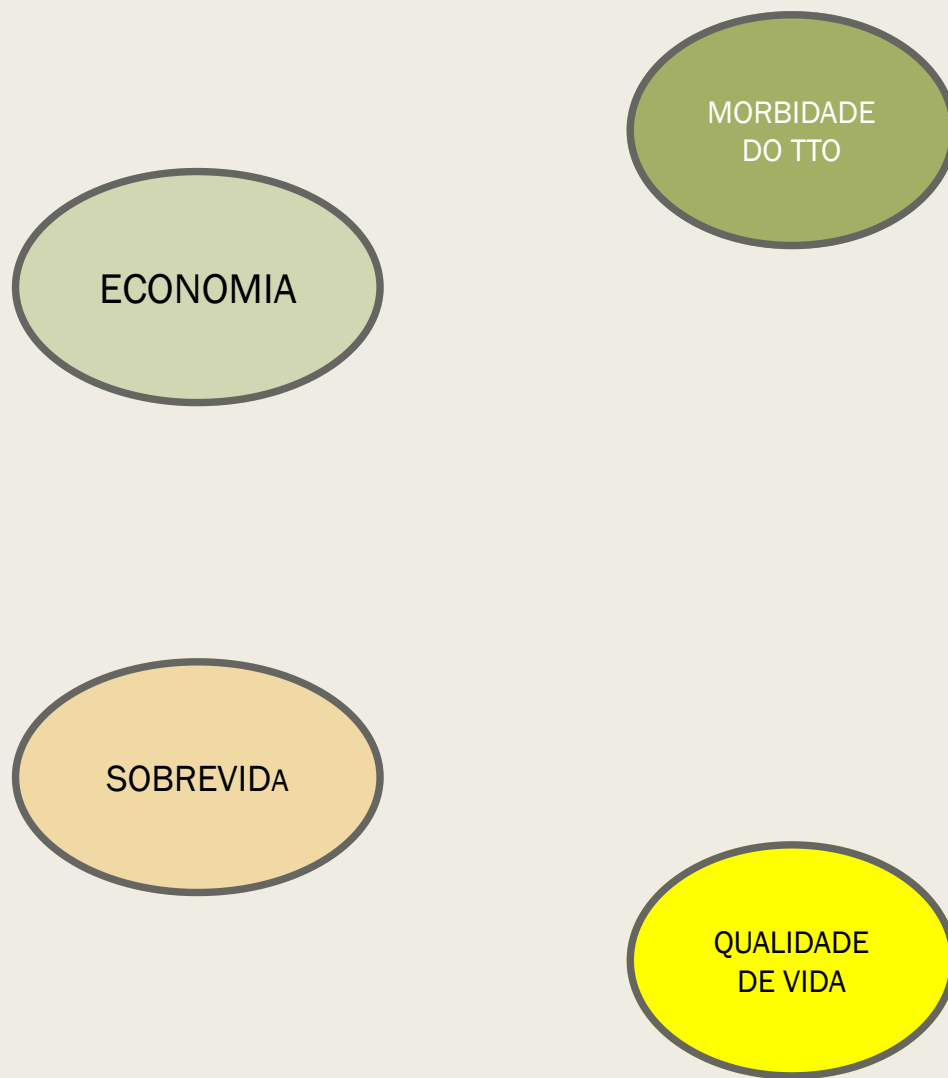
Governos e Fontes  
Pagadoras  
Epidemiologistas/estatísticos





*Casa da Mama*

# RASTREAMENTO





Quando se fala em rastreamento, deve-se pensar na visão de **coletividade**, e não individualmente. Será necessário rastrear uma grande quantidade de pessoas saudáveis e assintomáticas para detectar alguns pacientes com a condição pesquisada

# CRITÉRIOS PARA PROGRAMA DE RASTREAMENTO

1. A doença deve representar um importante problema de **SAÚDE PÚBLICA** seja relevante para a população, levando em consideração os conceitos de magnitude, transcendência e vulnerabilidade;

2. A história natural da doença ou do problema clínico deve ser **HISTÓRIA NATURAL BEM CONHECIDA** e **ESTÁGIO**

3. Deve haver um **PRÉ-CLÍNICO** clínico (assintomático) bem definido, durante o qual a doença possa ser diagnosticada;

4. O **BENEFÍCIO DA DETECÇÃO PRECOCE** do tratamento precoce com o rastreamento deve ser maior do que se a condição fosse tratada no momento habitual de diagnóstico;

5. Os exames que detectam a condição clínica no estágio assintomático devem ser **DISPONIBILIDADE EXAMES** aceitáveis e confiáveis;

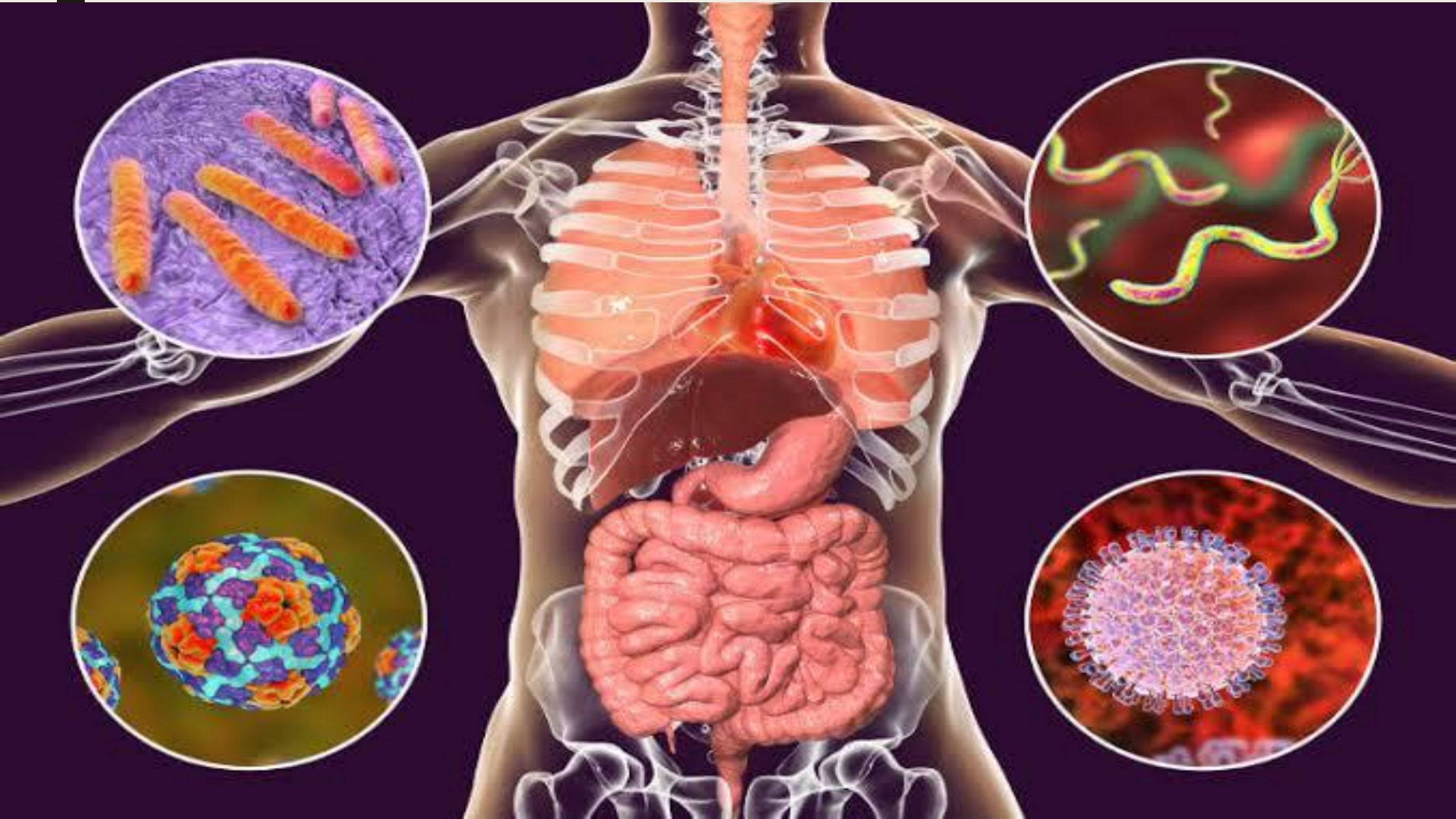
6. O **CUSTO** do rastreamento e tratamento de uma condição clínica deve ser razoável e compatível com o orçamento destinado ao sistema de saúde como um todo;

## DESAFIO

| BENEFÍCIOS             | MALEFÍCIOS                        |
|------------------------|-----------------------------------|
| Redução de mortalidade | Overdetection                     |
| Redução da morbidade   | FP (prevalência + especificidade) |
| Prolongar sobrevida    | FN, \$\$\$, overtreatment         |



Identificar programas que tragam  
mais **benefícios** do que **danos**



PREVALENCIA

## INCIDÊNCIA DE CÂNCER DE MAMA (EUA 2009)

|                         |                           |
|-------------------------|---------------------------|
| <b>FAIXA 30-40 ANOS</b> | <b>1 EM 2500 MULHERES</b> |
|-------------------------|---------------------------|

|                         |                          |
|-------------------------|--------------------------|
| <b>FAIXA 41-50 ANOS</b> | <b>1 EM 200 MULHERES</b> |
|-------------------------|--------------------------|

|                         |                         |
|-------------------------|-------------------------|
| <b>FAIXA 51-60 ANOS</b> | <b>1 EM 50 MULHERES</b> |
|-------------------------|-------------------------|

MORBIDADE/LETALIDADE



**Table 2. Age-specific Ten-year Probability of Breast Cancer Diagnosis or Death for US Women**

| Current age          | Diagnosed with<br>invasive breast cancer | Dying from<br>breast cancer |
|----------------------|------------------------------------------|-----------------------------|
| 20                   | 0.1% (1 in 1,479)                        | <0.1% (1 in 18,503)         |
| 30                   | 0.5% (1 in 209)                          | <0.1% (1 in 2,016)          |
| 40                   | 1.5% (1 in 65)                           |                             |
| 50                   | 2.4% (1 in 42)                           |                             |
| 60                   | 3.5% (1 in 28)                           |                             |
| 70                   | 4.1% (1 in 25)                           |                             |
| 80                   | 3.0% (1 in 33)                           |                             |
| <b>Lifetime risk</b> | <b>12.8% (1 in 8)</b>                    | <b>2.6% (1 in 39)</b>       |

50 anos  
Risco morte por CA de  
mama (10 anos)

**1/310**

Note: Probability is among those who have not been previously diagnosed with cancer. Percentages and "1 in" numbers may not be numerically equivalent due to rounding.

©2019, American Cancer Society, Inc., Surveillance Research

# TESTES DIAGNÓSTICOS

# ELEIÇÃO DE TESTE DE RASTREAMENTO

- Boa sensibilidade (baixa taxa de falso-negativos)
- Elevada especificidade (alarmes falsos)

| Teste     | Doença                       |                           | Total    |
|-----------|------------------------------|---------------------------|----------|
|           | Presente<br>(sensib. = 100%) | Ausente<br>(espec. = 80%) |          |
| Teste (+) | 5                            | 199                       | 204      |
| Teste (-) | 0                            | 796                       | 796      |
| Total     | 5                            | 995                       | N = 1000 |

# ELEIÇÃO DE TESTE DE RASTREAMENTO

- Prevalência 60-70 anos

| Teste   | Doença            |                  | Total |
|---------|-------------------|------------------|-------|
|         | Presente<br>S 70% | Ausente<br>E 75% |       |
| Teste + | 70                | 725              | 795   |
| Teste - | 30                | 2175             | 2205  |
| Total   | 100               | 2900             | 3000  |

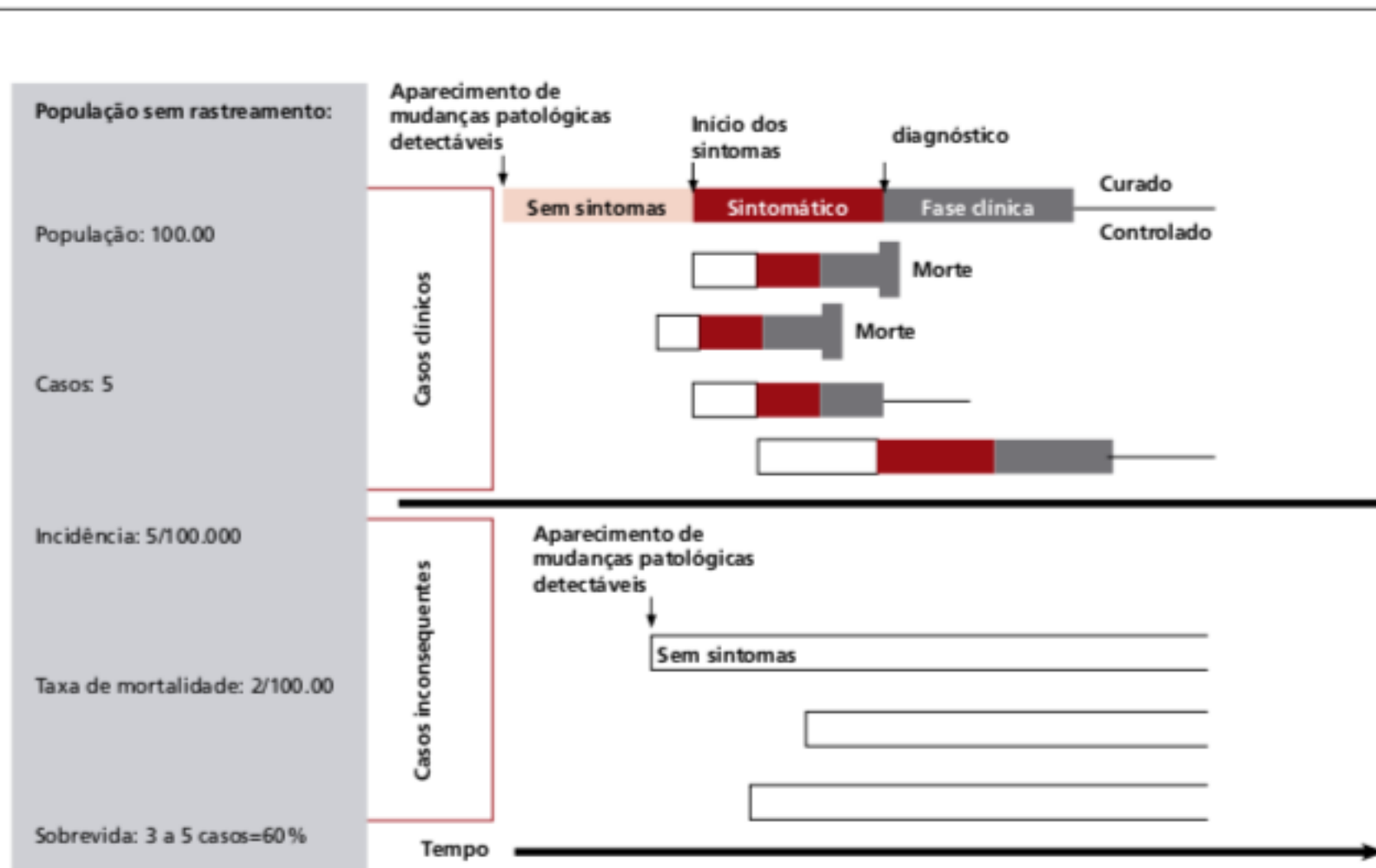
# ELEIÇÃO DE TESTE DE RASTREAMENTO

- Prevalência 30-40 anos

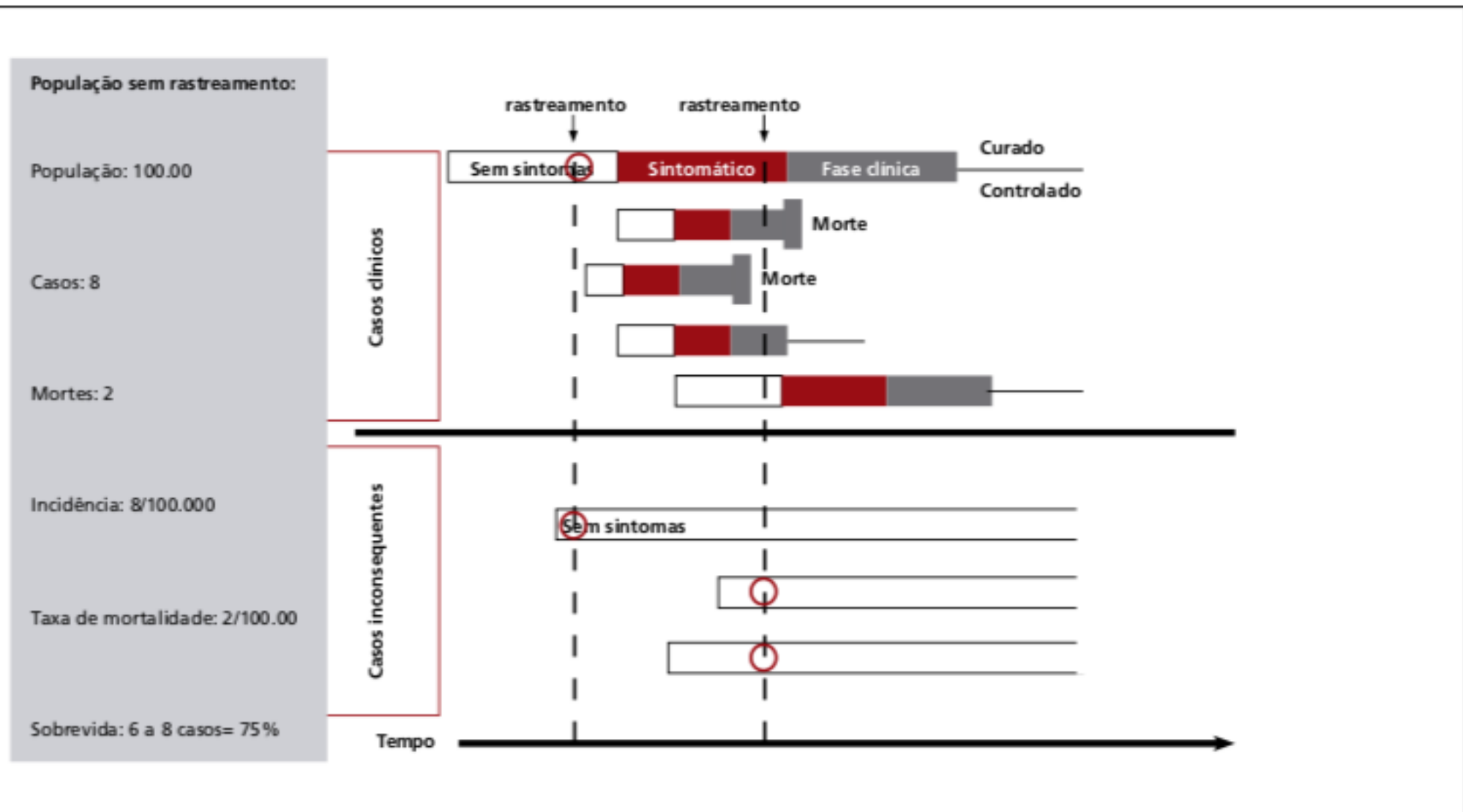
| Teste   | Doença            |                  | Total  |
|---------|-------------------|------------------|--------|
|         | Presente<br>S 70% | Ausente<br>E 75% |        |
| Teste + | 3                 | 2499             | 2502   |
| Teste - | 1                 | 7497             | 7498   |
| Total   | 4                 | 9996             | 10.000 |

# HISTÓRIA NATURAL DA DOENÇA

**Figura 3.3 – Número de casos na população antes da introdução de um programa de rastreamento.**



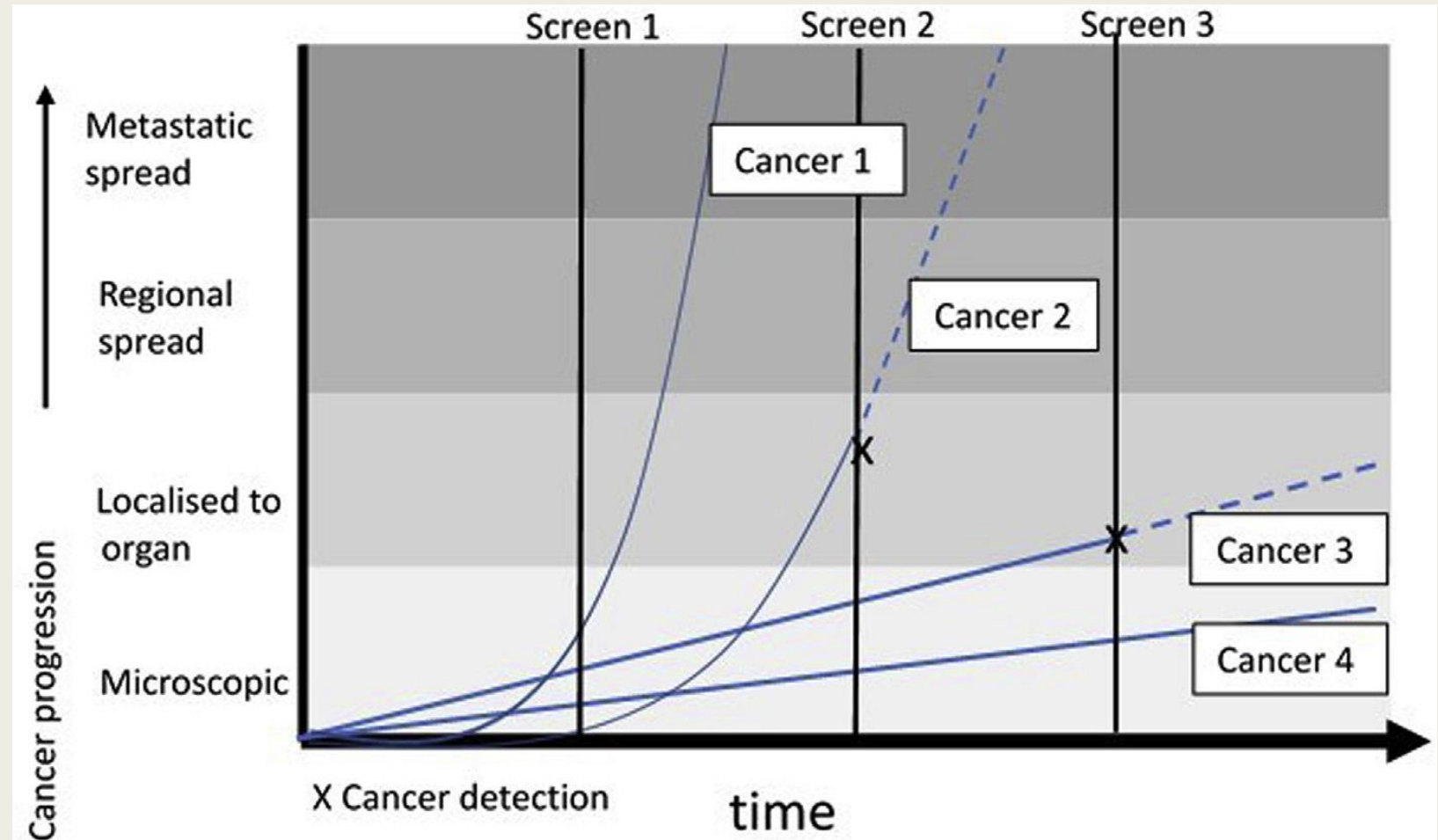
**Figura 3.4 – Número de casos na população após a introdução de um programa de rastreamento.**



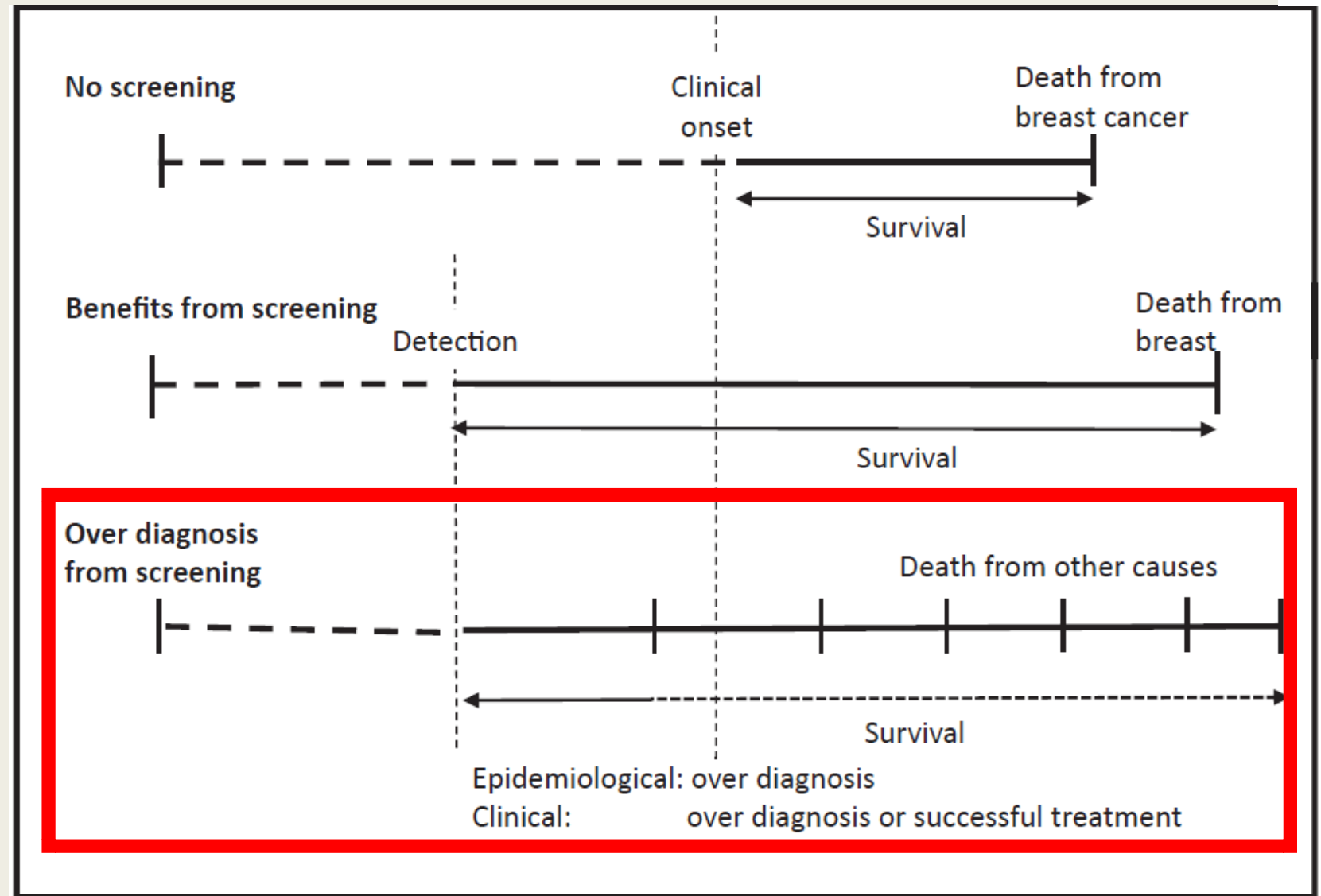
Fonte: (RAFFLES E GRAY, 2007)

DETECÇÃO PRECOCE –  
-SEMPRE POSSIVEL???  
-SOMENTE BENEFÍCIOS???

# Overdiagnosis



# Overdiagnosis

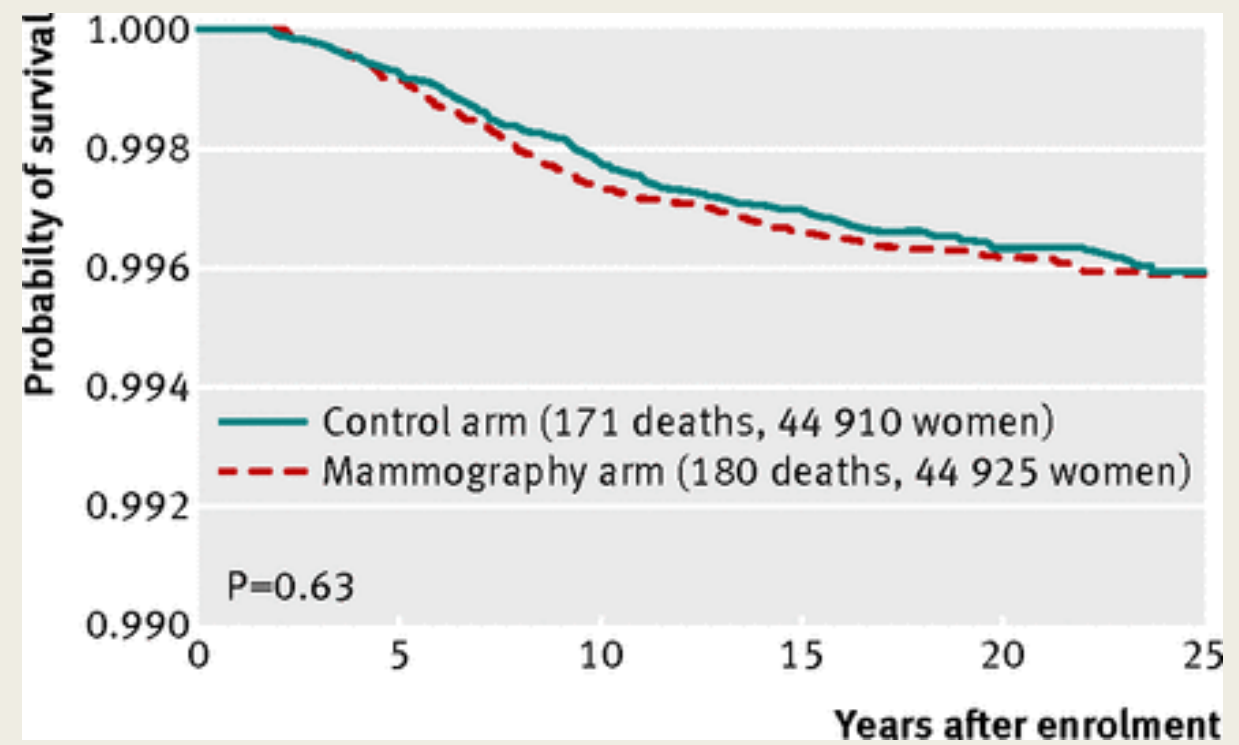
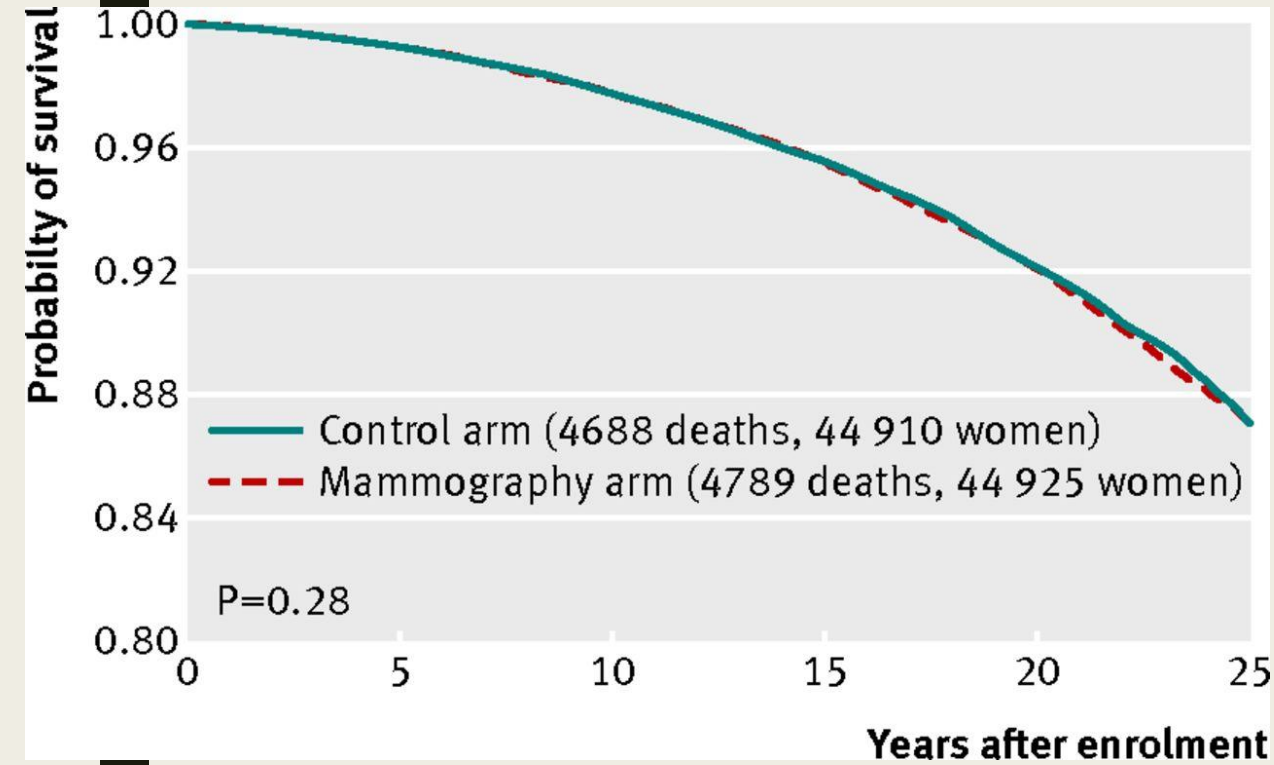


Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Screening Study: randomised screening trial

BMJ 2014;348:g366

**Objective:** To compare breast cancer incidence and mortality up to 25 years in women aged 40-59 who did or did not undergo mammography screening

**Methodology:** 15 screening centres in six Canadian provinces, 1980-85  
Participants 89 835 women, aged 40-59, randomly assigned to mammography or control (no mammography). Interventions Women aged 40-49 in the mammography arm and all women aged 50-59 in both arms received annual physical breast examinations. Women aged 40-49 in the control arm received a single examination followed by usual care in the community



Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Screening Study: randomised screening trial

BMJ 2014;348:g366

DIAGN. CA DE MAMA  
666 X 524  
15 ANOS DE SEGUIMENTO

OVERDIAGNOSIS

22%

1 caso “overdiagn.”  
Cada 424 MMGs

# O QUE APRENDEMOS??

MAIOR DETECCÃO NÃO SIGNIFICA BENEFÍCIO

IMPORTANTE PARCELA DOS CASOS NUNCA  
EVOLUIRIA PARA MORTE

DIAGNÓSTICO ATRAVÉS DO RASTREAMENTO  
NÃO SIGNIFICA CURA

É FUNDAMENTAL MÉTODO COMPROVAR  
IMPACTO NA SOBREVIDA



# RASTREAMENTOS ÚTEIS

- Avaliação de risco cardiovascular
- Avaliação de dislipidemia
- HAS
- DM II
- Tabagismo/ abuso de álcool/ obesidade
- USG tv, DO, CO, MMG



*Casa da Mama*

# RASTREAMENTO PARA O CANCER DE MAMA

The Malmo Study  
1976  
(12 anos)

21 mil 45-69 anos  
MMG 18-24m

RR  
0,62-  
1,07

21 mil controles

EUROPE

Two-County Trial  
1977

80x39 mil 40-74  
anos (Ostergotland)  
MMG 24-33m

RR  
0,68(0,52-  
0,89)

39x 18 mil  
Kopparberg

## U.S. PREVENTIVE TASK FORCE (2002, 2009, 2016)

### Evitar/Prolongar 1 vida

1904 – 40-49a (15%)  
1339 – 50-59a (32%)  
377 – 60-69a (32%)

### Recomendações

MMG bianuais a partir 50a  
(conserva benefício 70-99%)  
(reduz malefícios até 50%)

### ATENÇÃO

BALANÇO  
BENEFÍCIOS/MALEFÍCIOS



# RASTREAMENTO PARA O CANCER DE MAMA

HÁ ESPACO PARA A US MAMAS??????

PARA QUEM??????



# DANOS DO RASTREAMENTO

- **FALSO POSITIVO**
- **FALSO NEGATIVO**
- **SOBRECARGA DE EXAMES DIAGNÓSTICOS**
- **'OVERDIAGNOSIS' (SOBREDIAGNÓSTICO)**
- **'OVERTREATMENT' (SOBRETRATAMENTO)**
- **PREOCUPACAO E ANSIEDADE**
- **CUSTOS**
- **B3!!!!!!!!!!!!!!!!!!!!!!**



## Breast ultrasound: recommendations for information to women and referring physicians by the European Society of Breast Imaging

Andrew Evans<sup>1</sup> · Rubina M. Trimboli<sup>2</sup> · Alexandra Athanasiou<sup>3</sup> · Corinne Balleyguier<sup>4</sup> · Pascal A. Baltzer<sup>5</sup> · Ulrich Bick<sup>6</sup> · Julia Camps Herrero<sup>7</sup> · Paola Clauser<sup>5</sup> · Catherine Colin<sup>8</sup> · Eleanor Cornford<sup>9</sup> · Eva M. Fallenberg<sup>6</sup> · Michael H. Fuchsjaeger<sup>10</sup> · Fiona J. Gilbert<sup>11</sup> · Thomas H. Helbich<sup>5</sup> · Karen Kinkel<sup>12</sup> · Sylvia H. Heywang-Köbrunner<sup>13</sup> · Christiane K. Kuhl<sup>14</sup> · Ritse M. Mann<sup>15</sup> · Laura Martincich<sup>16</sup> · Pietro Panizza<sup>17</sup> · Federica Pediconi<sup>18</sup> · Ruud M. Pijnappel<sup>19</sup> · Katja Pinker<sup>5,20</sup> · Sophia Zackrisson<sup>21</sup> · Gabor Forrai<sup>22</sup> · Francesco Sardanelli<sup>23,24</sup>  · for the European Society of Breast Imaging (EUSOBI) , with language review by Europa Donna–The European Breast Cancer Coalition

**Table 1** Definite indications for breast ultrasound

---

Palpable lump

Axillary adenopathy

First approach for clinical breast abnormalities under age 40

First approach for clinical breast abnormalities in pregnant  
or lactating women

Suspicious abnormalities at mammography or magnetic  
resonance imaging (MRI)

Suspicious nipple discharge

Recent nipple inversion

Skin retraction

Breast inflammation

Abnormalities at the surgical scar after breast conserving  
surgery or mastectomy

Abnormalities in the presence of breast implants

Screening high-risk women, especially when MRI is not performed

Loco-regional staging of a known breast cancer, when MRI is  
not performed

Guidance for percutaneous breast interventions (needle biopsy,  
pre-surgical localisation, fluid collection drainage)

Monitoring patients with breast cancer receiving neo-adjuvant  
therapy, when MRI is not performed)

---



**Table 2** Possible indications for breast ultrasound

---

Supplemental screening after mammography for women aged 40–74 with dense breasts

Surveillance of women with previous mammographically occult breast cancer

Palpable lump felt by the woman with normal clinical examination

Focal new breast pain unrelated to the menstrual cycle

Intraoperative US lesion identification and US of specimens

---



**Table 3** Inappropriate indications for breast ultrasound

---

Screening for breast cancer in average-risk women under age 40

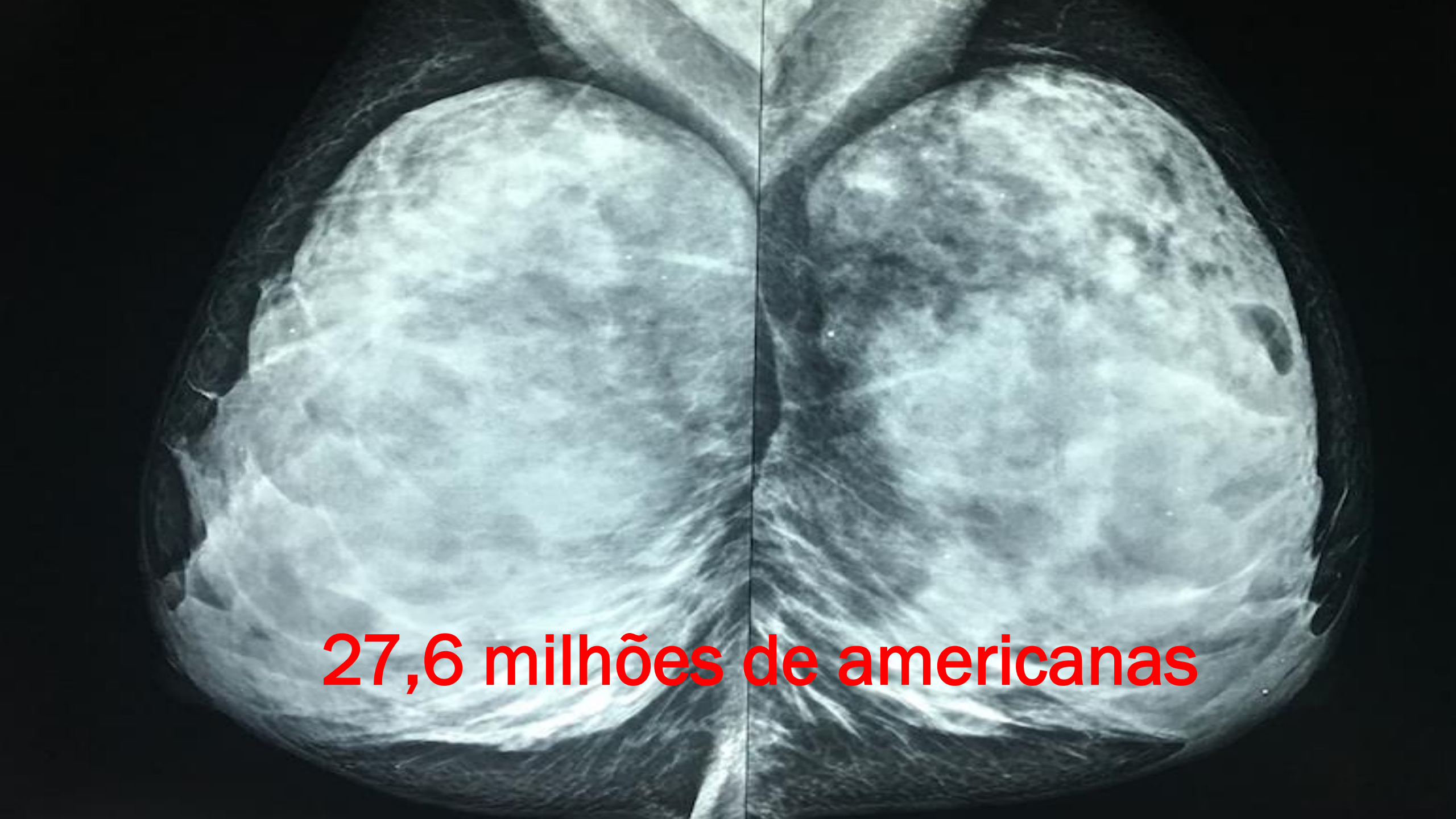
Screening for breast cancer as a stand-alone alternative to mammography  
in average-risk women with  $\geq 40$  years of age

Follow-up in women with previous history of breast cancer as an  
alternative to mammography

Diffuse bilateral premenstrual breast pain

Screening of breast implant integrity in asymptomatic women

---

A black and white mammogram image showing two breasts side-by-side. The image is split vertically down the middle. The left breast shows a relatively uniform, light gray texture. The right breast shows a more complex, darker, and more textured appearance, possibly indicating a higher density or a specific finding. The background is black.

**27,6 milhões de americanas**



ELSEVIER

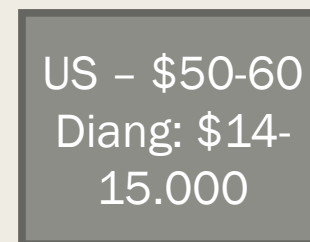
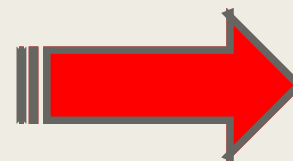
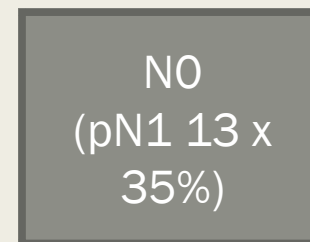
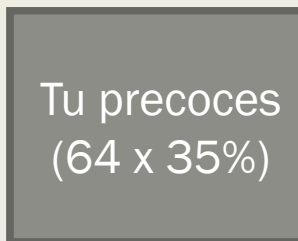
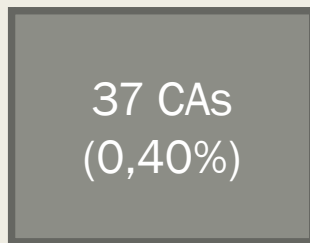
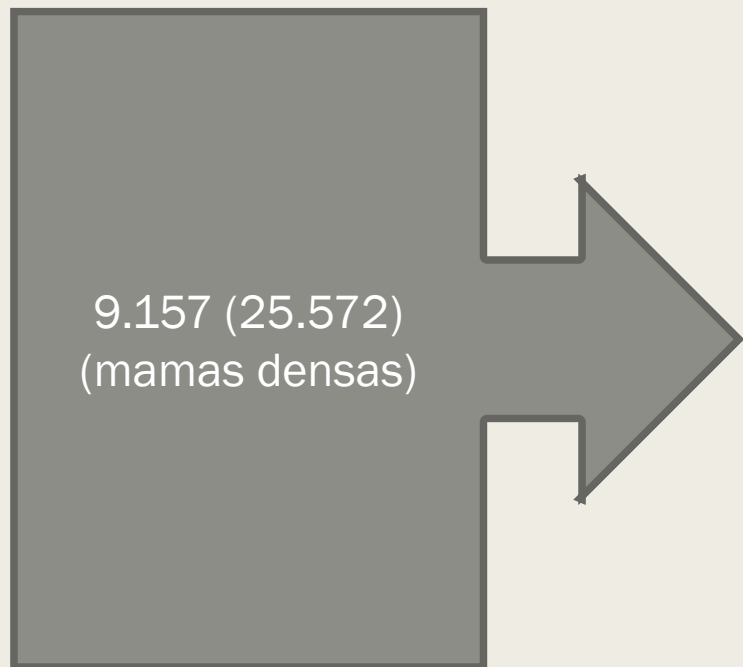
European Journal of Cancer

Volume 44, Issue 4, March 2008, Pages 539-544



# Breast screening with ultrasound in women with mammography-negative dense breasts: Evidence on incremental cancer detection and false positives, and associated cost

Vittorio Corsetti <sup>a</sup>, Nehmat Houssami <sup>b, c</sup>, Aurora Ferrari <sup>a</sup>, Marco Ghirardi <sup>a</sup>, Sergio Bellarosa <sup>a</sup>, Osvaldo Angelini <sup>a</sup>, Claudio Bani <sup>a</sup>, Pasquale Sardo <sup>a</sup>, Giuseppe Remida <sup>a</sup>, Enzo Galligioni <sup>a</sup>, Stefano Ciatto <sup>c</sup> ✉

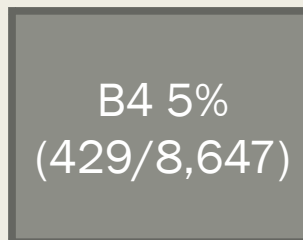
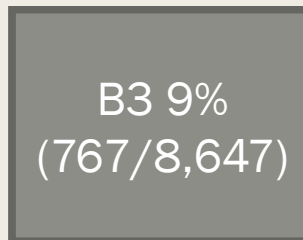
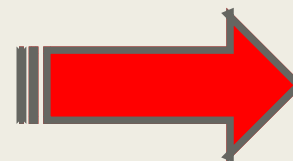
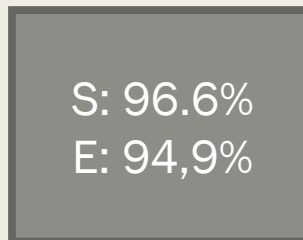
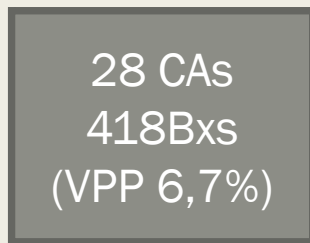
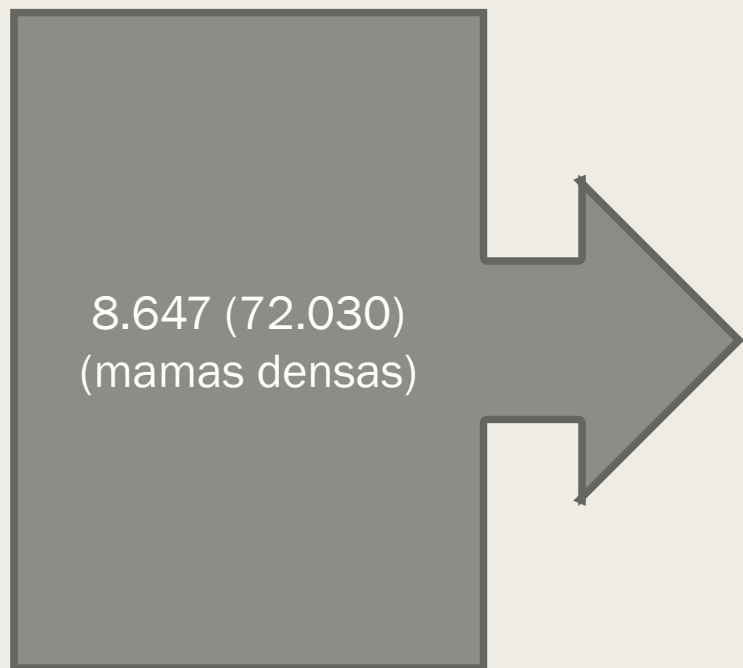


ORIGINAL ARTICLE

## **The Connecticut Experiment: The Role of Ultrasound in the Screening of Women With Dense Breasts**

Jean Weigert MD, FACR, Sarah Steenbergen MD

First published: 26 September 2012 | <https://doi.org/10.1111/tbj.12003> | Citations: 97



*Ann Intern Med.* 2016;164:268-278. doi:10.7326/M15-1789 [www.annals.org](http://www.annals.org)

For author affiliations, see end of text.

This article was published at [www.annals.org](http://www.annals.org) on 12 January 2016.

REVIEW

**Annals of Internal Medicine**

# Supplemental Screening for Breast Cancer in Women With Dense Breasts: A Systematic Review for the U.S. Preventive Services Task Force

Joy Melnikow, MD, MPH; Joshua J. Fenton, MD, MPH; Evelyn P. Whitlock, MD, MPH; Diana L. Miglioretti, PhD; Meghan S. Weyrich, MPH; Jamie H. Thompson, MPH; and Kunal Shah

**Table 4.** Breast Cancer Detection Outcomes for Supplemental HHUS, ABUS, MRI, and DBT

| <b>Study, Year (Reference)<br/>USPSTF Quality Rating</b> | <b>Cancer<br/>Cases Detected</b> | <b>Cancer Detection<br/>Rate (95% CI)</b> | <b>Recall Rate<br/>(95% CI), %</b> | <b>Biopsy Rate<br/>(95% CI), %*</b> |
|----------------------------------------------------------|----------------------------------|-------------------------------------------|------------------------------------|-------------------------------------|
| <b>HHUS</b>                                              |                                  |                                           |                                    |                                     |
| Berg et al, 2012 (25)<br>Good                            | 15/3414 examinations             | 4.4 per 1000 examinations (2.5–7.2)       | 14 (12.7–15.1)                     | NR                                  |
| Corsetti et al, 2011 (26)<br>Good                        | 32/7224 examinations             | 4.4 per 1000 examinations (3.0–6.2)       | NR                                 | 6 (5.4–6.5)                         |
| Brancato et al, 2007 (27)<br>Fair                        | 2/5227 women                     | 0.4 per 1000 women (0–1.4)                | 2 (1.7–2.5)                        | 1 (0.9–1.6)                         |
| Girardi et al, 2013 (28)<br>Fair                         | 22/9960 women                    | 2.2 per 1000 women (1.4–3.3)              | NR                                 | NR                                  |
| Hooley et al, 2012 (29)<br>Fair                          | 3/648 women                      | 4.6 per 1000 women (1.0–13.5)             | 24 (20.3–27.0)                     | 7 (5.2–9.4)                         |
| Leong et al, 2012 (30)<br>Fair                           | 2/106 women                      | 18.9 per 1000 women (1.7–50.3)            | 17 <sup>†</sup>                    | 13 (7.4–21.2) <sup>†</sup>          |
| Parris et al 2013 (31)<br>Fair                           | 10/5519 women                    | 1.8 per 1000 women (0.9–3.3)              | NR                                 | 3 (2.8–3.8)                         |
| Venturini et al, 2013 (32)<br>Fair                       | 2/826 women                      | 2.4 per 1000 women (0.3–8.7)              | 10 (7.5–11.7)                      | 1 (0.6–2.2)                         |
| Weigert and Steenbergen,<br>2012 (33)<br>Fair            | 25/8647 women                    | 2.9 per 1000 women (1.9–4.3)              | 14 (13.1–14.5)                     | 5 (4.4–5.3)                         |
| Youk et al, 2011 (34)<br>Fair                            | 11/446 examinations              | 24.7 per 1000 examinations<br>(12.4–43.7) | 14 (10.6–17.2)                     | 11 (8.2–14.3)                       |

# US em Mamas Densas

- Aumenta a taxa de detecção de câncer
- Detecção de tumores iniciais e NO
- Impacto Mortalidade????
  
- Aumento da taxa de falso +
- Elevado número de biópsias
- Seguimento de numerosos casos B3
- Ansiedade e tensão
- Aumenta os gastos

The background image shows a cityscape with a mix of residential and commercial buildings. In the foreground, there is a park area with a winding path, a small lake with a fountain, and several palm trees. The text is overlaid on a white rectangular box in the center of the image.

USG DE MAMAS

USO EXCLUSIVO EM ASSOCIAÇÃO A  
MMG

The background image shows a cityscape with a park and a lake. In the foreground, there is a body of water with several dark, cylindrical structures (possibly part of a fountain or water treatment) protruding from it. A paved path or road curves along the edge of the water. In the middle ground, there are lush green trees and a large, modern building with a distinctive white, conical roof structure. The background is filled with a dense residential area with many houses and apartment buildings, some of which are multi-story. The sky is clear and blue.

USG DE MAMAS

**NÃO RASTREAR MULHERES ABAIXO  
DE 40 ANOS**

The background image shows a cityscape with a mix of residential and commercial buildings. In the foreground, there is a park area with a winding path, a pond with a fountain, and several palm trees. The text is overlaid on a white rectangular box in the center of the image.

## USG DE MAMAS

**NÃO RASTREAR MULHERES COM  
MAMAS LIPOSSUBSTITUÍDAS**

The background image shows a cityscape with a mix of residential and commercial buildings. In the foreground, there is a park area with a winding path, a pond with a fountain, and several palm trees. The text is overlaid on a white rectangular box in the center of the image.

## USG DE MAMAS

**MAMAS DENSAS APÓS 50 ANOS  
(DISCUTÍVEL 40-50)**

The background image shows a cityscape with a mix of residential and commercial buildings. In the foreground, there is a park area with a large pond, several palm trees, and a paved path. A fountain is visible in the lower left corner of the pond. The text is overlaid on a white rectangular box in the center of the image.

USG DE MAMAS

RISCO INTERMEDIÁRIO  
(CANCER DE MAMA FAMILIAR)

Dúvidas?

Obrigado!

**Rodrigo Gregório Brandão**

☎ Tel: (11) 981617511

@ E-mail:  
rodrigobrandao.masto@gmail.com

