



EARLY DIAGNOSIS FOR NIGERIA: **BREAST CANCER PREVENTION AND DOWNSTAGING**

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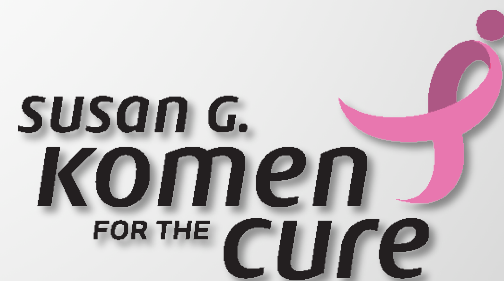


The Breast Health Global Initiative

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EARLY DIAGNOSIS FOR NIGERIA

- Breast Cancer Prevention
- Screening vs. Early Diagnosis
- Prerequisites for Screening



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CANCER CONTROL STRATEGIES DEFINITIONS

Primary prevention: Eliminating or minimizing exposure to cancer risk factors and by reducing susceptibility to their effects, avoiding carcinogenesis.

Early detection: Identify an existing cancer in the initial stages when a cure with effective treatment is likely.

Screening: The use of a test or intervention among asymptomatic individuals in an at-risk population or cohort to optimize early detection (also called secondary prevention).



CANCER CONTROL STRATEGIES

PREVENTION VS. EARLY DETECTION

Cancer type	Relative incidence in LMICs (%)	Prevention potential (PAF) (%)	Screening effectiveness (estimated mortality benefit, %)	MIR in HICs (%)	Difference in MIR between HICs and LMICs (%)	Health policy priority
Breast	15.6	21	Yes (20–40)	22	28	Early detection and treatment
Prostate	5.1	0	No* (0–30)	18	64	Treatment
Lung	4.1	74	Unknown (0–20)	82	7	Prevention
Colorectum	4.2	13–15	Yes (12–32)	42	34	Early detection and treatment
Cervix uteri	11.7	95–100	Yes (20–70)	42	19	Prevention > early detection
Stomach	3.7	69	No†	56	38	Prevention > treatment
Liver	5.3	81	No*	86	9	Prevention
Corpus uteri	1.3	37	No*	19	20	Prevention > treatment
Ovary	2.2	12	No*	67	9	Additional research
Esophagus	4.9	46–58	No*	81	11	Prevention

*Screening for esophageal, uterine, ovarian, and prostate cancers is advised only for high-risk patient cohorts. †Gastric screening may be indicated in countries that have a particularly high gastric cancer burden (for example, in Japan).



CANCER CONTROL STRATEGIES

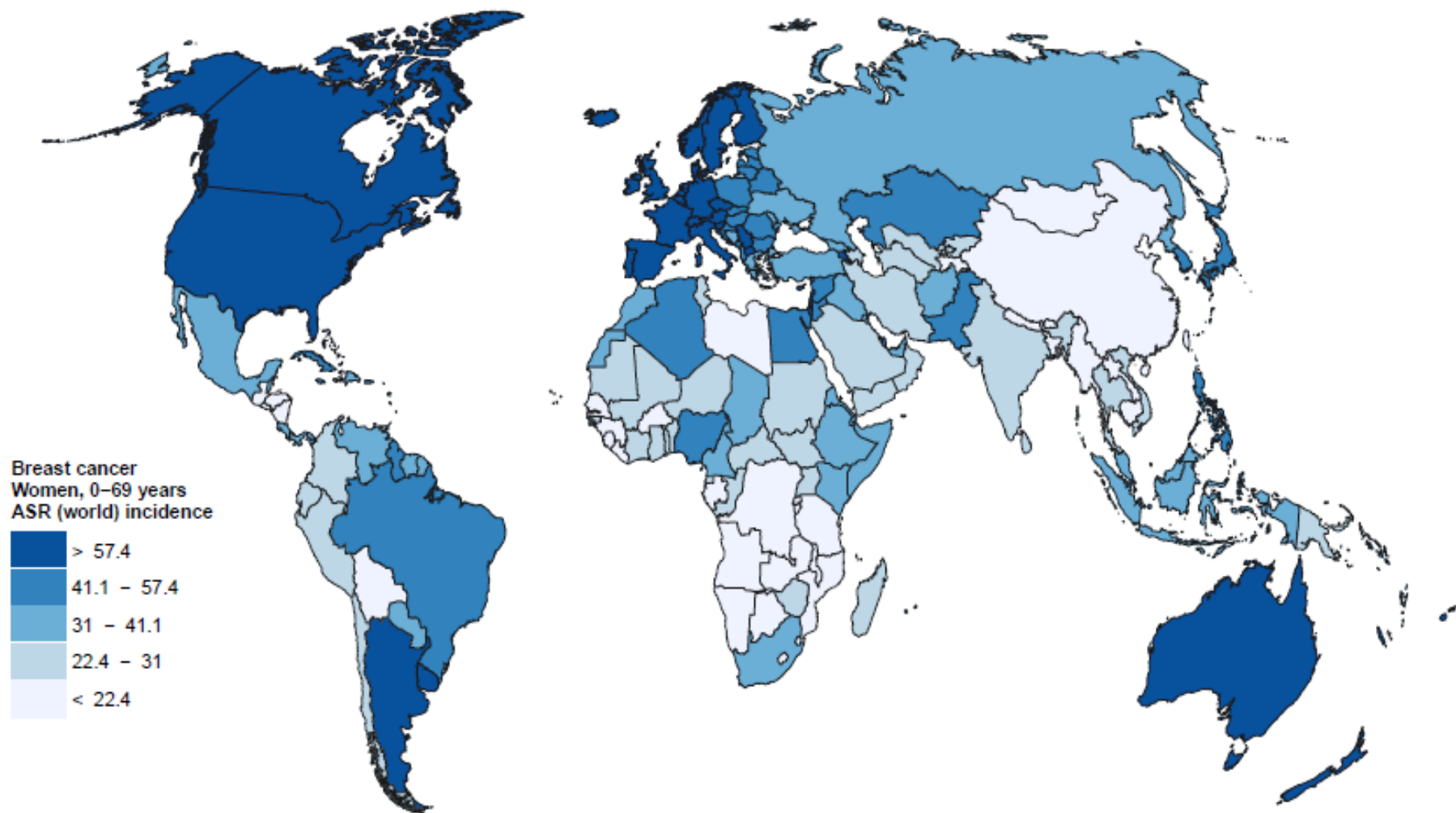
PRIMARY PREVENTION

Health behaviors associated
with reduced breast cancer risk

1. Prolonged lactation
2. Regular physical activity
3. Weight control
4. Avoid excess alcohol intake
5. Avoid prolonged use of exogenous hormones
6. Avoid excessive radiation exposure



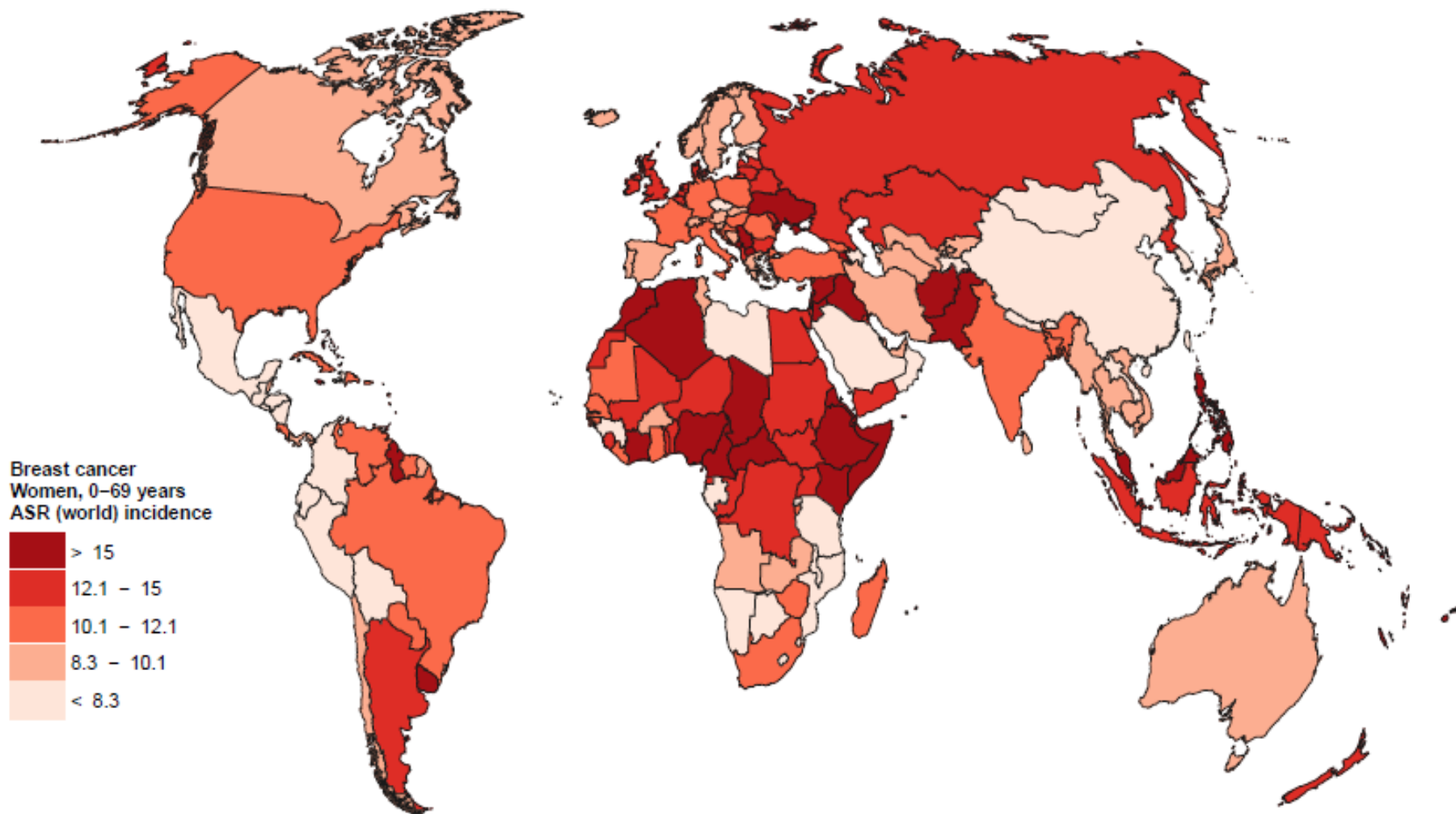
BREAST CANCER GLOBAL INCIDENCE



SOURCE: Globocan 2012 (IARC)

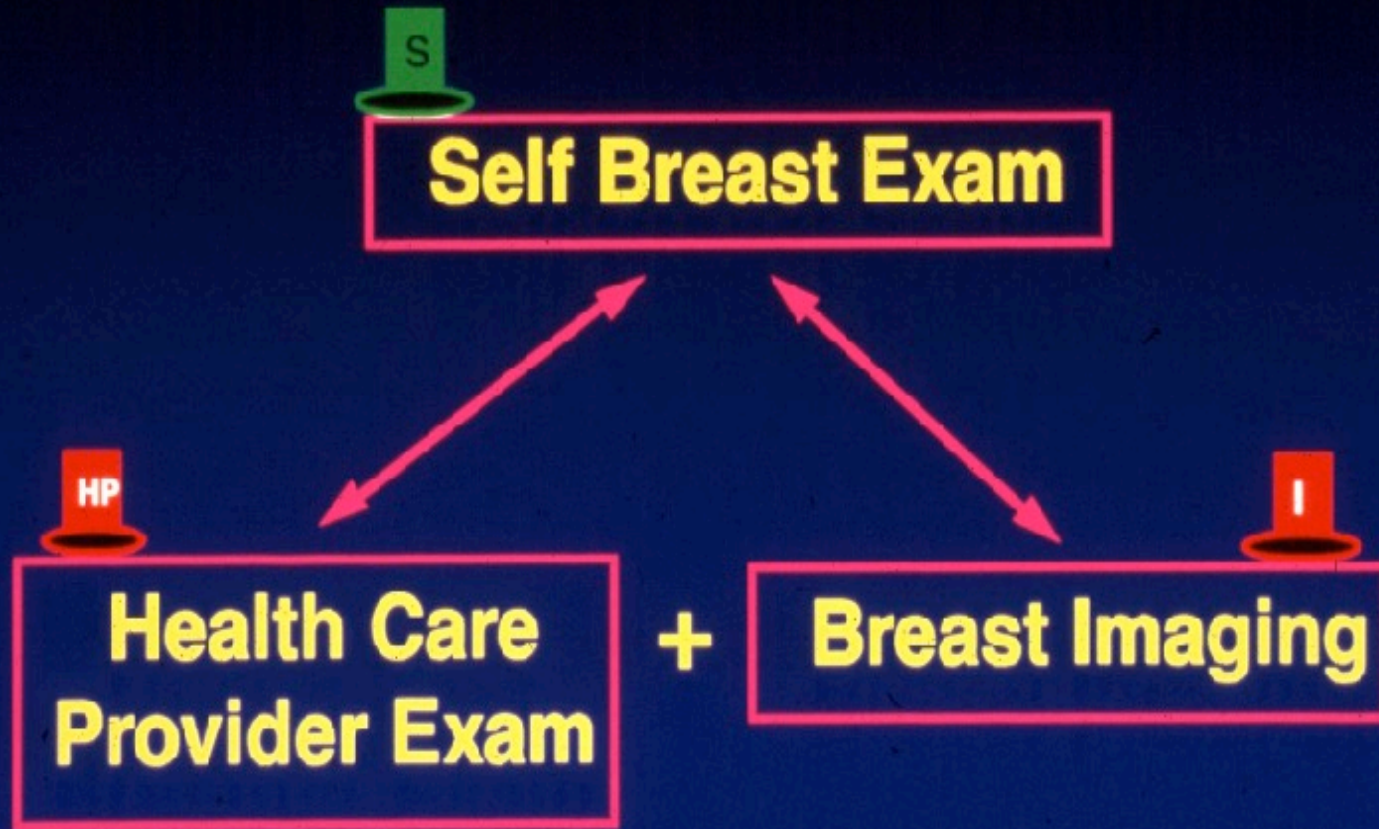


BREAST CANCER GLOBAL MORTALITY



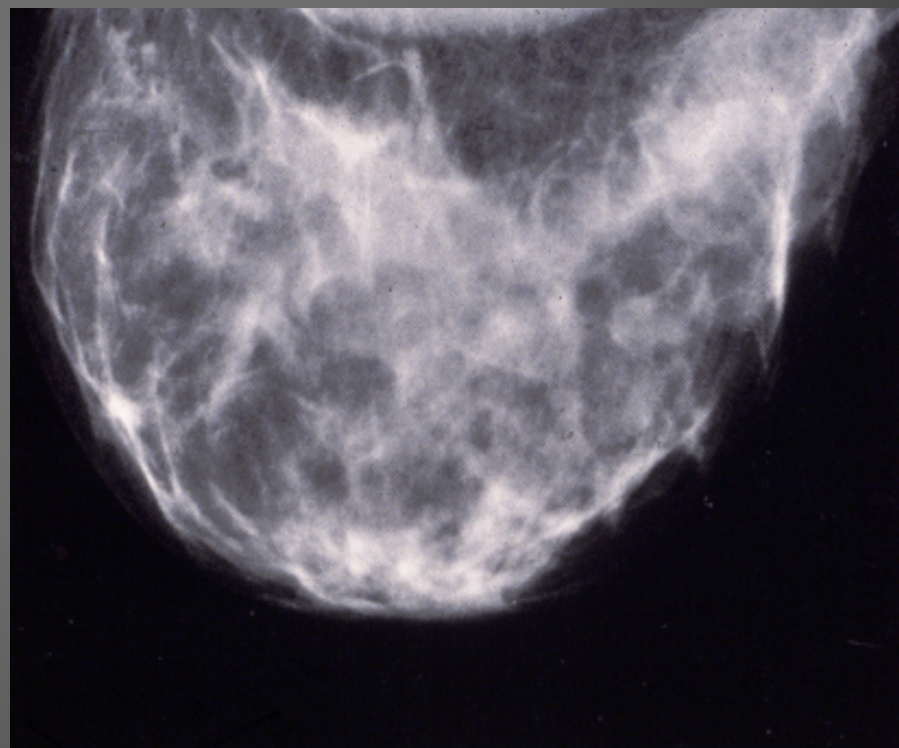
SOURCE: Globocan 2012 (IARC)

BREAST CANCER DETECTION



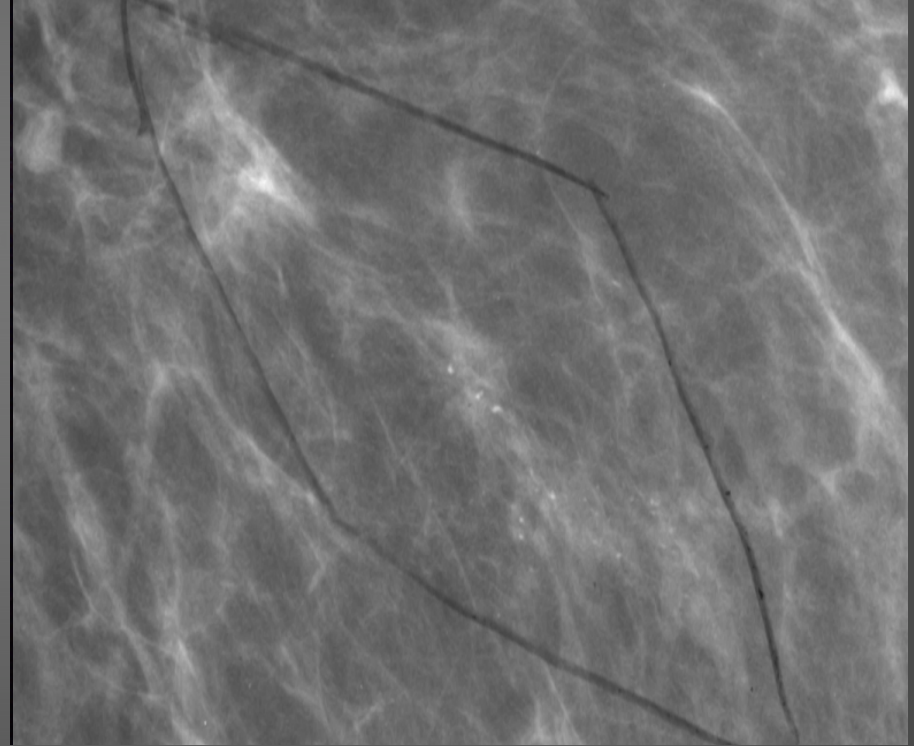
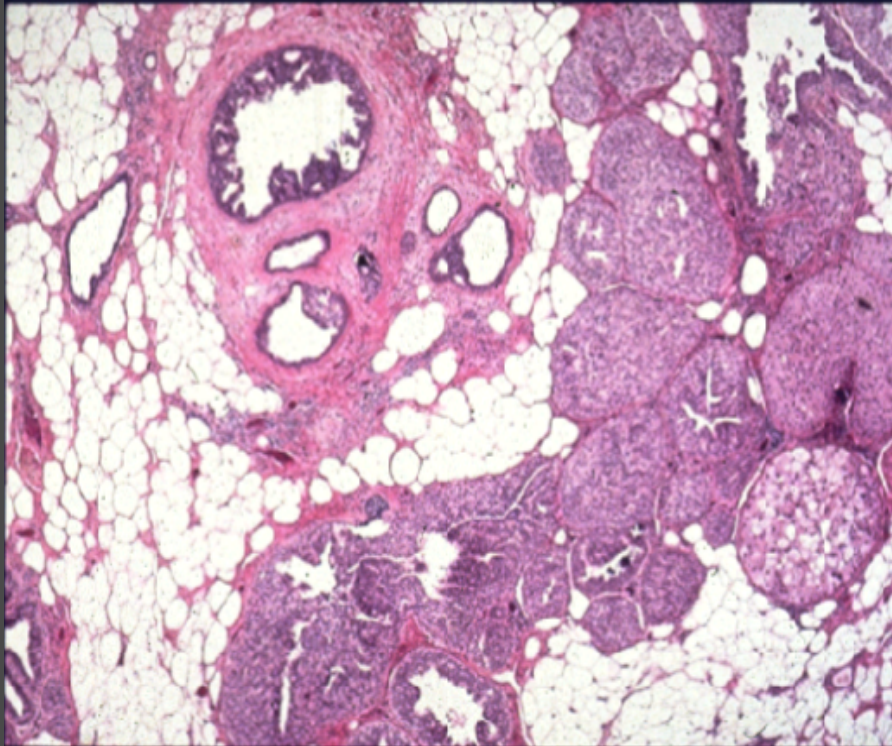


SCREENING MAMMOGRAM CRANIO-CAUDAL (CC) VIEW



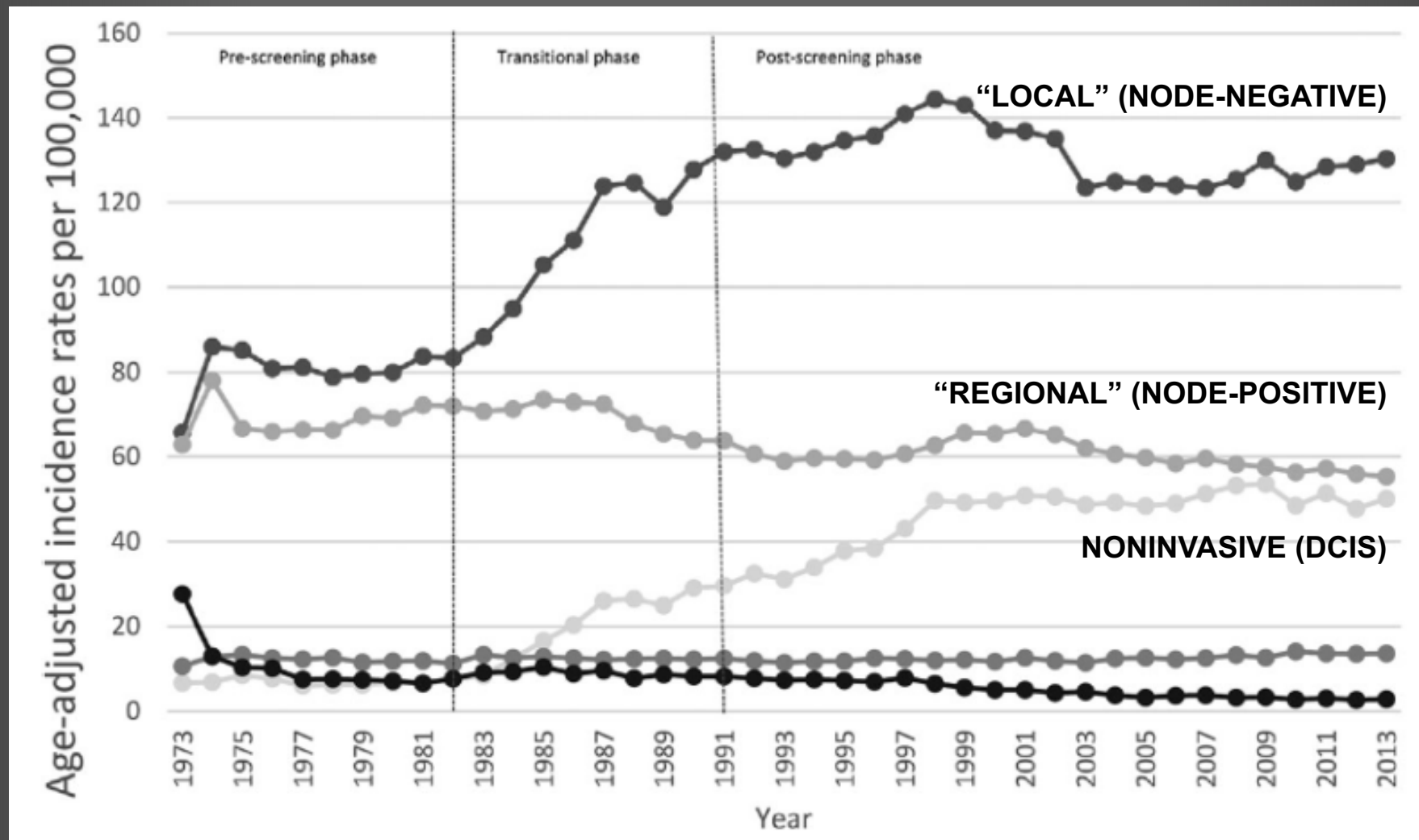


SCREENING MAMMOGRAM MICROCALCIFICATIONS AND DCIS





U.S. BREAST CA INCIDENCE 1973-2013





BREAST CANCER SCREENING: AMERICAN CANCER SOCIETY 2015

- Annual mammograms beginning at age 45 for women of average risk
- Women over 55 should transition to mammograms every other year
- Screening continued in women with life expectancy greater than 10 years
- CBE not recommended for breast cancer screening (qualified recommendation)

Clinical Review & Education

Special Communication

**Breast Cancer Screening for Women at Average Risk
2015 Guideline Update From the American Cancer Society**

Kevin C. Oeffinger, MD; Elizabeth T. H. Fontham, MPH, DrPH; Ruth Etzioni, PhD; Abbe Hertz, PhD; James S. Michaelson, PhD; Ya-Chen Tina Shih, PhD; Louise C. Walter, MD; Timothy R. Church, PhD; Christopher R. Flowers, MD, MS; Samuel J. LaMonte, MD; Andrew M. D. Wolf, MD; Carol DeSantis, MPH; Joannie Lortet-Tieulent, MSc; Kimberly Andrews; Deena Marassaram-Baptiste, PhD; Debbie Saslow, PhD; Robert A. Smith, PhD; Otis W. Brawley, MD; Richard Wender, MD

IMPORTANCE Breast cancer is a leading cause of premature mortality among US women. Early detection has been shown to be associated with reduced breast cancer morbidity and mortality.

OBJECTIVE To update the American Cancer Society (ACS) 2003 breast cancer screening guideline for women at average risk for breast cancer.

PROCESS The ACS commissioned a systematic evidence review of the breast cancer screening literature to inform the update and a supplemental analysis of mammography registry data to address questions related to the screening interval. Formulation of recommendations was based on the quality of the evidence and judgment (incorporating values and preferences) about the balance of benefits and harms.

EVIDENCE SYNTHESIS Screening mammography in women aged 40 to 69 years is associated with a reduction in breast cancer deaths across a range of study designs, and inferential evidence supports breast cancer screening for women 70 years and older who are in good health. Estimates of the cumulative lifetime risk of false-positive examination results are greater if screening begins at younger ages because of the greater number of mammograms, as well as the higher recall rate in younger women. The quality of the evidence for overdiagnosis is not sufficient to estimate a lifetime risk with confidence. Analysis examining the screening interval demonstrates more favorable tumor characteristics when premenopausal women are screened annually vs biennially. Evidence does not support routine clinical breast examination as a screening method for women at average risk.

RECOMMENDATIONS The ACS recommends that women with an average risk of breast cancer should undergo regular screening mammography starting at age 45 years (strong recommendation). Women aged 45 to 54 years should be screened annually (qualified recommendation). Women 55 years and older should transition to biennial screening or have the opportunity to continue screening annually (qualified recommendation). Women should have the opportunity to begin annual screening between the ages of 40 and 44 years (qualified recommendation). Women should continue screening mammography as long as their overall health is good and they have a life expectancy of 10 years or longer (qualified recommendation). The ACS does not recommend clinical breast examination for breast cancer screening among average-risk women at any age (qualified recommendation).

CONCLUSIONS AND RELEVANCE These updated ACS guidelines provide evidence-based recommendations for breast cancer screening for women at average risk of breast cancer. These recommendations should be considered by physicians and women in discussions about breast cancer screening.

Editorial page 1569
Author Video Interview, Author Audio Interview, Animated Summary Video, and JAMA Report Video at jama.com
Related articles pages 1615 and 1635 and JAMA Patient Page page 1658
Supplemental content at jama.com
CME Quiz at jamanetworkcme.com and CME Questions page 1640
Related article at jamaoncology.com Related article at jamainternalmedicine.com

Author Affiliations. Author affiliations are listed at the end of this article.



BREAST CANCER SCREENING: LIMITATION OF RECOMMENDATIONS

- ACS assumes that all women are having regular mammograms repeated each 1-2 years
- ACS recommendations do not reflect critical role of CBE for diagnostic work-up and treatment
- ACS recommendations provide no guidance for women under age 45

Clinical Review & Education

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Global status report on noncommunicable diseases 2010



- Biennial mammographic screening (50–70 years) with breast cancer treatment are among “**best buys**”
- Could avert 19% of cancer burden
- BUT breast cancer interventions impractical for poorer countries:
 - ❖ **implementation costs**
 - ❖ **limited feasibility of treatment** in primary care setting in LMCs

LMC IMPLEMENTATION RESEARCH

LOWER-MIDDLE INCOME COUNTRY



Indonesia

CBE training for nurse midwives

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METHODS

- 47 nurse midwives and 15 volunteer health workers in 5 districts of Jakarta, Indonesia trained in breast health education, screening and clinical breast examination (CBE)
- Women invited to local health facilities to receive a CBE and independently administered mammogram
- Demographic questionnaire completed by all participants
- Women with suspicious findings on either mammography or CBE underwent diagnostic work-up and fine needle aspiration (FNA) for diagnosis



RESULTS

- 1,179 women underwent both mammography and CBE
 - 289 women (24.5%) were found to have a suspicious finding on CBE, mammography or both
- 14 women (1.2%) were found to have a breast cancer
 - **Of the 14 breast cancers, 13 (93%) appreciated on CBE**
 - 167 (14.2%) CBE exams required additional work-up to diagnose 13 of the 14 cancers seen on mammography



RESULTS

- 1,179 women underwent both mammography and CBE
 - 289 women (24.5%) were found to have a suspicious finding on CBE, mammography or both
- 14 women (1.2%) were found to have a breast cancer
 - **8 of 14 patients (57%) failed to undergo treatment**
 - 2 of 14 breast cancer patients refused surgery
 - 6 of 14 breast cancer patients lost to follow-up



EARLY DIAGNOSIS FOR NIGERIA

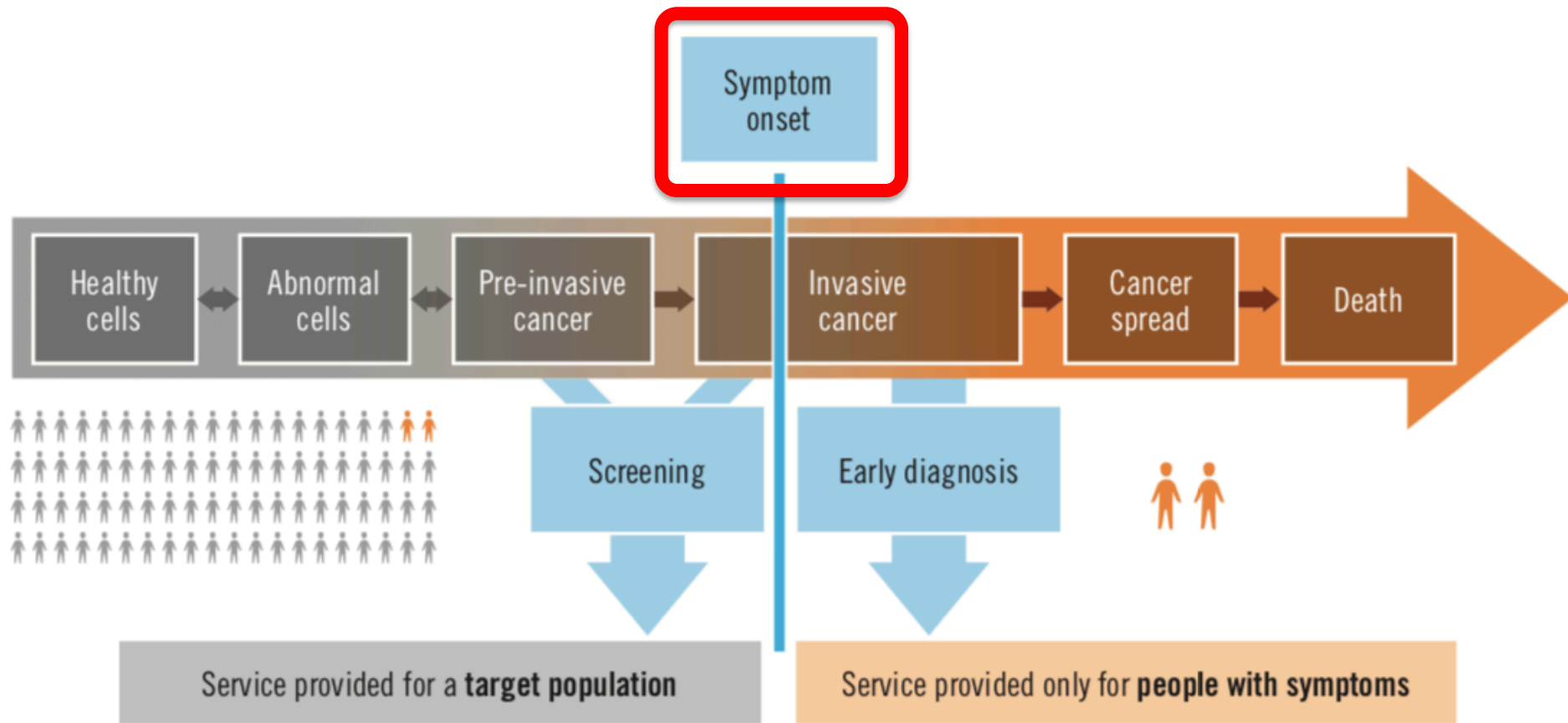
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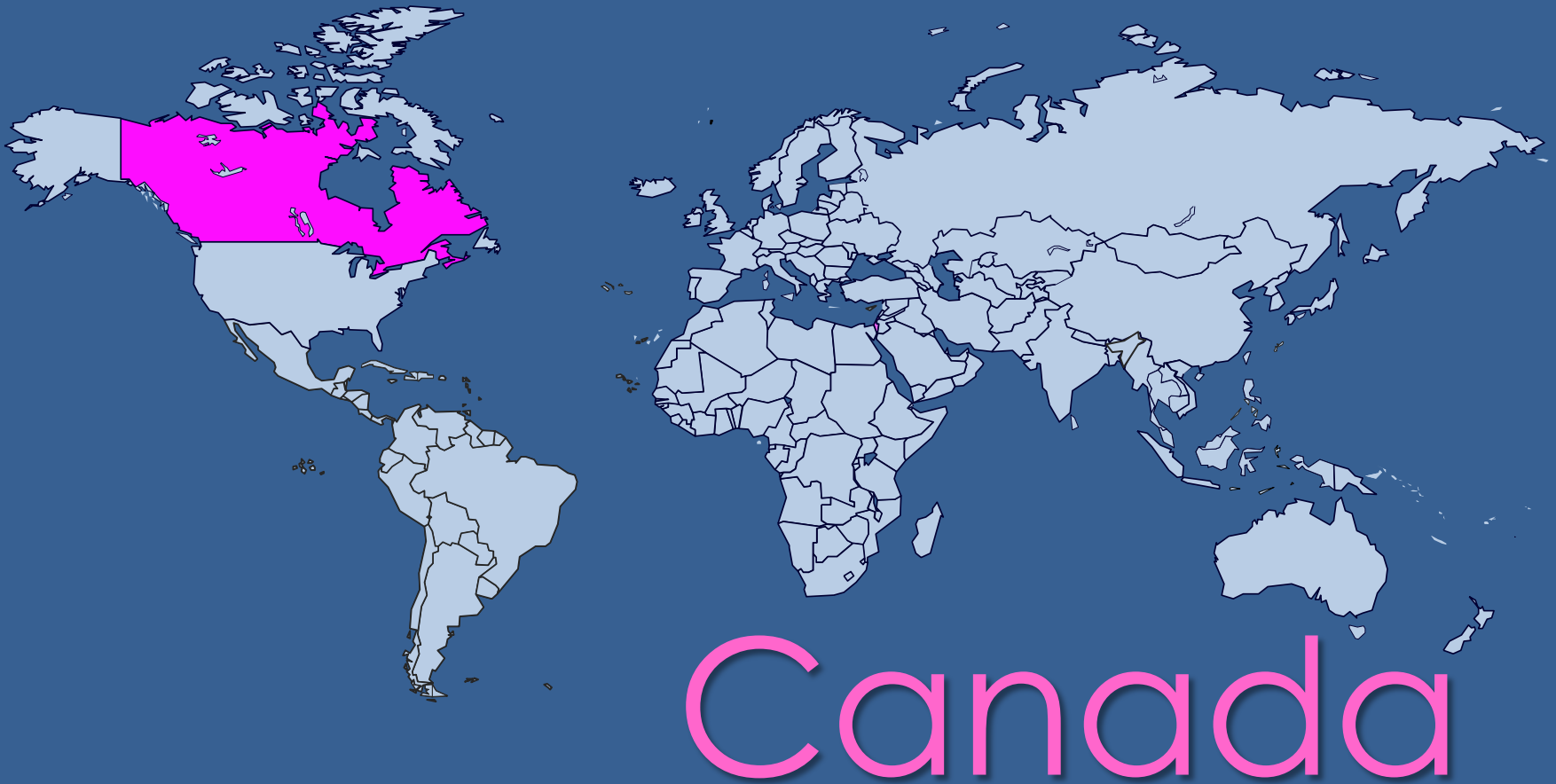
Screening vs. Early Diagnosis



Distinguishing between Screening & Early Diagnosis

LMC IMPLEMENTATION RESEARCH

LOWER-MIDDLE INCOME COUNTRY



Mammography Screening Trials

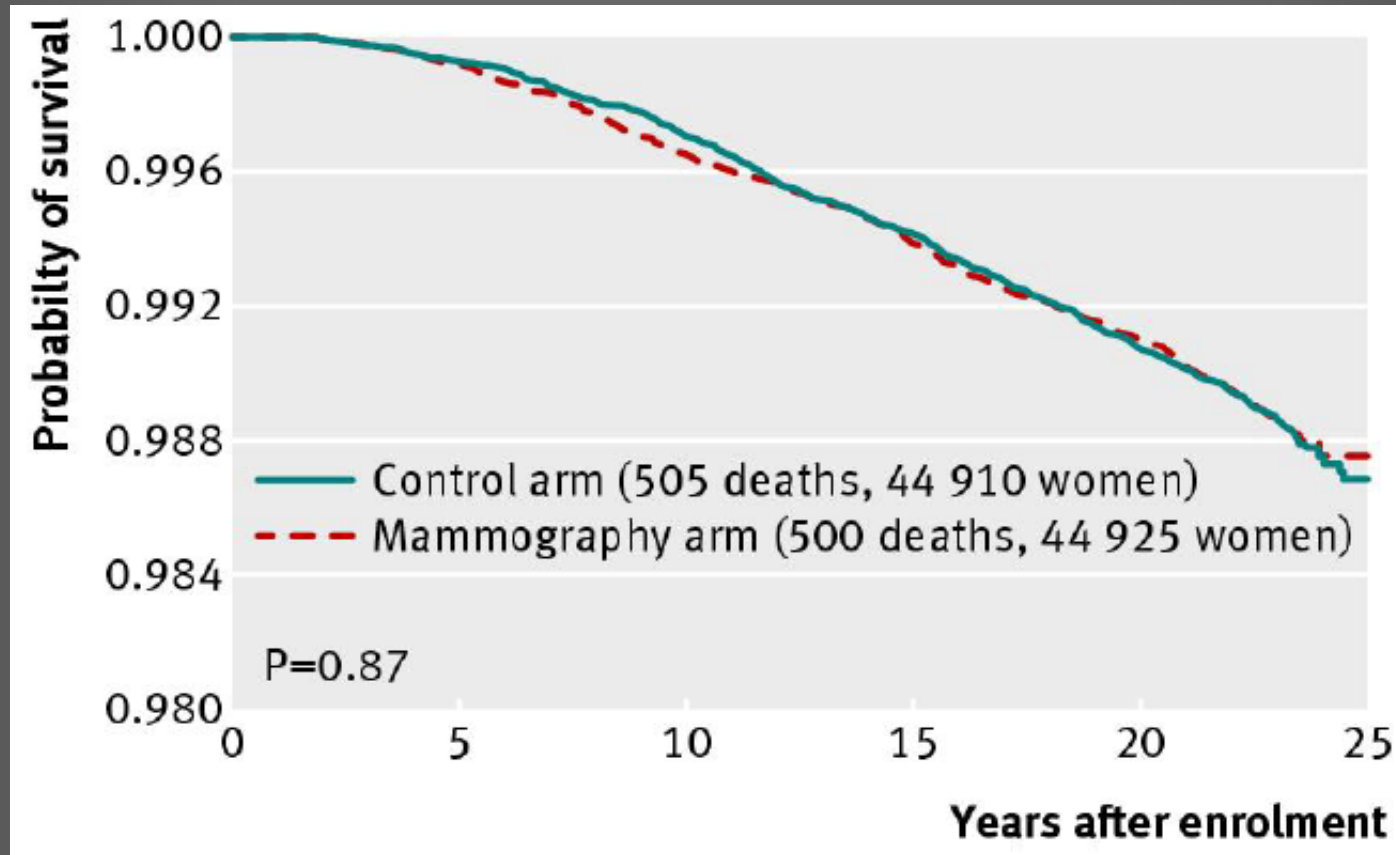
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RANDOMIZED SCREENING TRIALS

CANADIAN NATIONAL BREAST SCREENING STUDY



BREAST CANCER SPECIFIC MORTALITY

2 Miller et al, BMJ 348:g366, 2014



RANDOMIZED SCREENING TRIALS

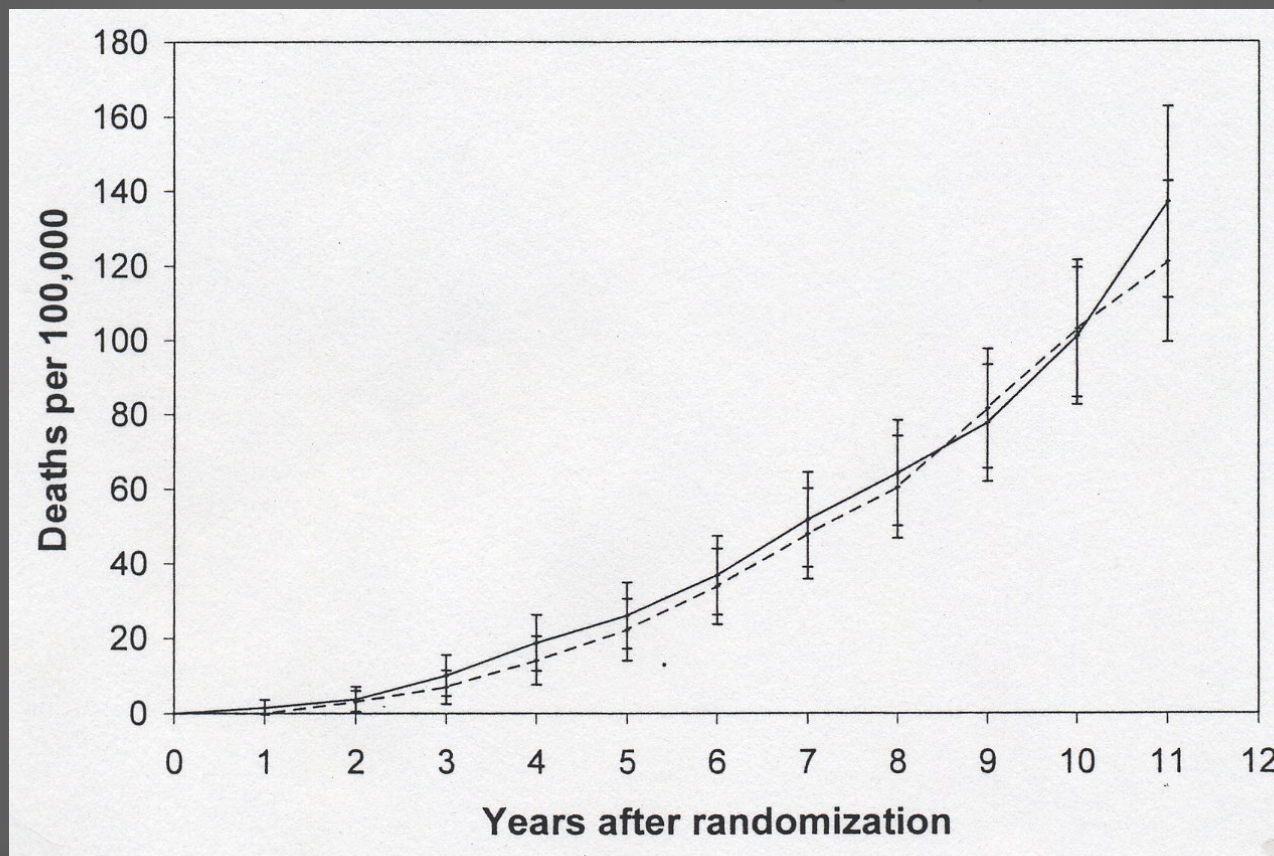
CANADIAN NATIONAL BREAST SCREENING STUDY

Table 1 | Number of breast cancers diagnosed in mammography arm and control arm, by study year

Year of study	Mammography arm (n=44 925)		Control arm (n=44 910)	
	No of cancers detected	Mean size (cm)	No of cancers detected	Mean size (cm)
1	253	1.87	170	2.03
2	109	2.05	89	2.19
3	101	1.64	89	2.11
4	111	2.01	86	2.08
5	92	1.98	90	2.13
Subtotal years 1-5	666	1.91	524	2.10
6	83	2.15	83	2.42
7	82	1.99	93	2.24
8	107	2.01	133	2.04
9	115	1.86	119	1.90
10	127	1.69	128	1.71
Subtotal years 6-10	514	1.93	556	2.05
Subtotal years 11-25	2070	—	2053	—
Subtotal years 6-25	2584	—	2609	—
Total years 1-25	3250	—	3133	—



RANDOMIZED SCREENING TRIALS BREAST SELF-EXAMINATION (BSE) IN SHANGHAI



CUMULATIVE BREAST CANCER MORTALITY

2 Thomas et al, JNCI 94:1445, 2002



RANDOMIZED SCREENING TRIALS BREAST SELF-EXAMINATION (BSE) IN SHANGHAI

Extent of Tumor	Instruction Group	Control Group
Size < 2 cm (T1)	44.9%	41.6%
Axillary nodes tumor free (N1)	47.0%	48.3%
Axillary nodes moveable (N2)	44.4%	44.1%
Axillary nodes fixed or internal mammary nodes affected (N3/N4)	8.6%	7.5%
Distant Metastasis (M1)	1.5%	2.5%

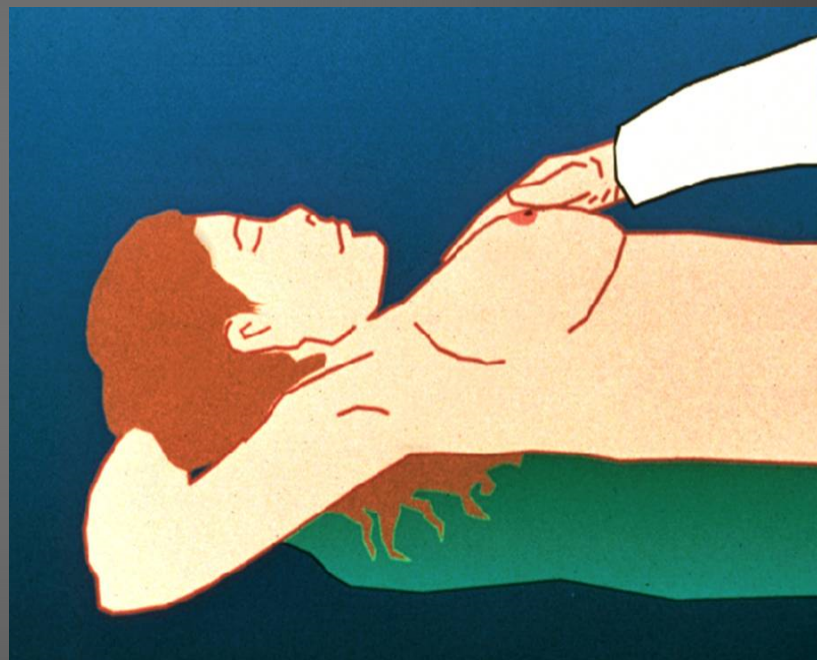
Many women in the control group presented with small localized tumors

2 Thomas et al, JNCI 94:1445, 2002



CLINICAL BREAST EXAMINATION: WHAT DO WE KNOW?

- CBE detects about 60% of mammo detected cancers
- CBE finds some cancers not seen on mammography
- CBE necessary for any breast program, especially when pts present with advanced disease



LMC IMPLEMENTATION RESEARCH

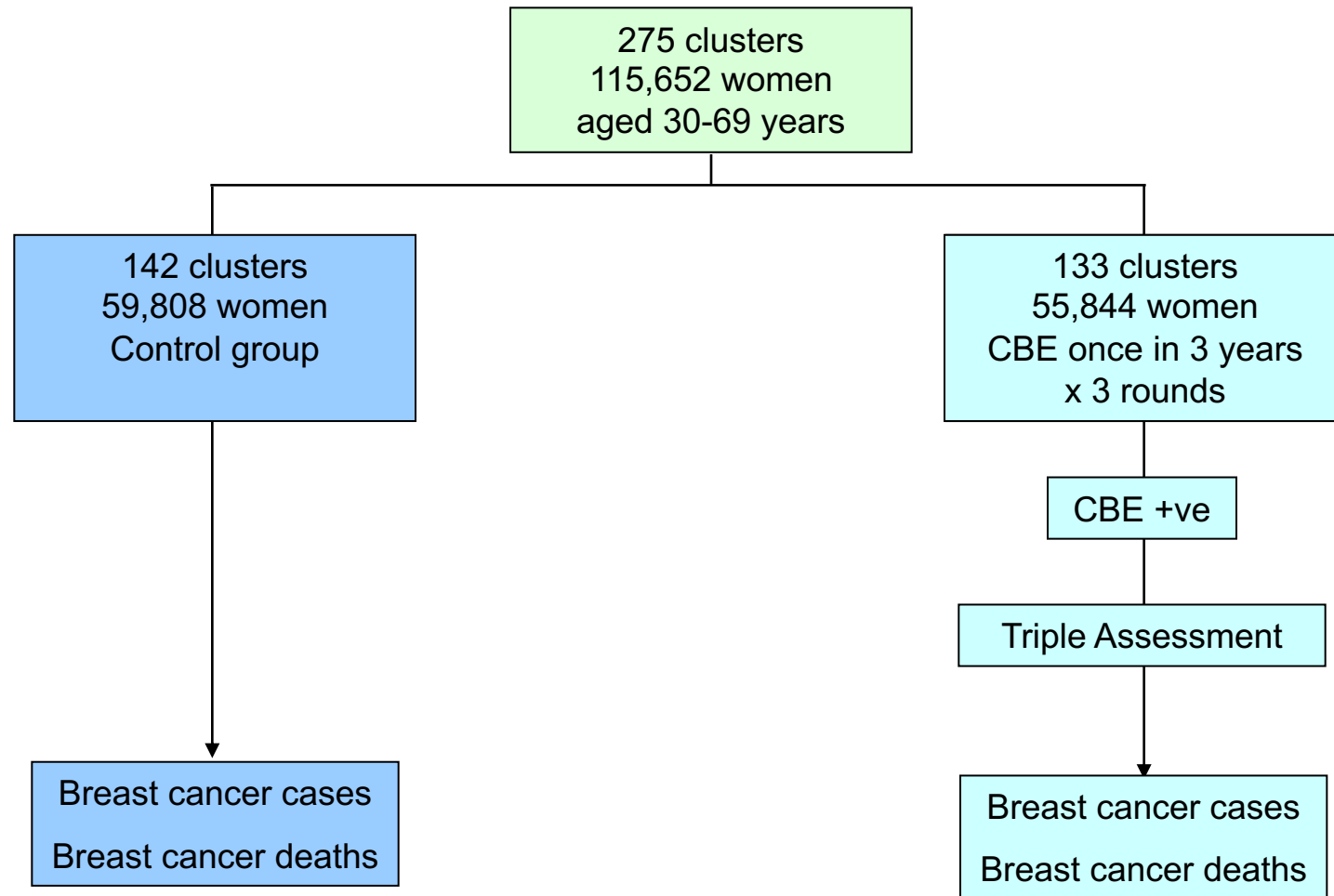
LOWER-MIDDLE INCOME COUNTRY



India

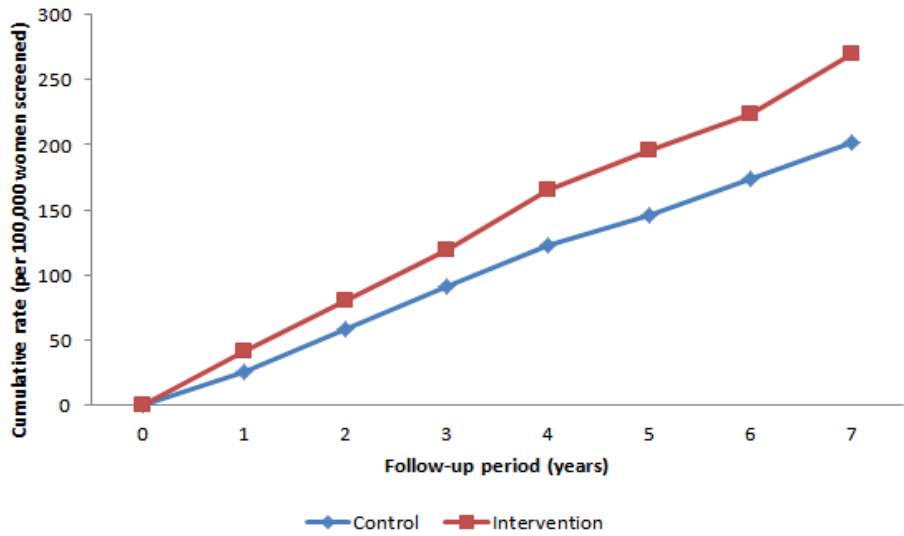
CBE Screening Trial

Study design

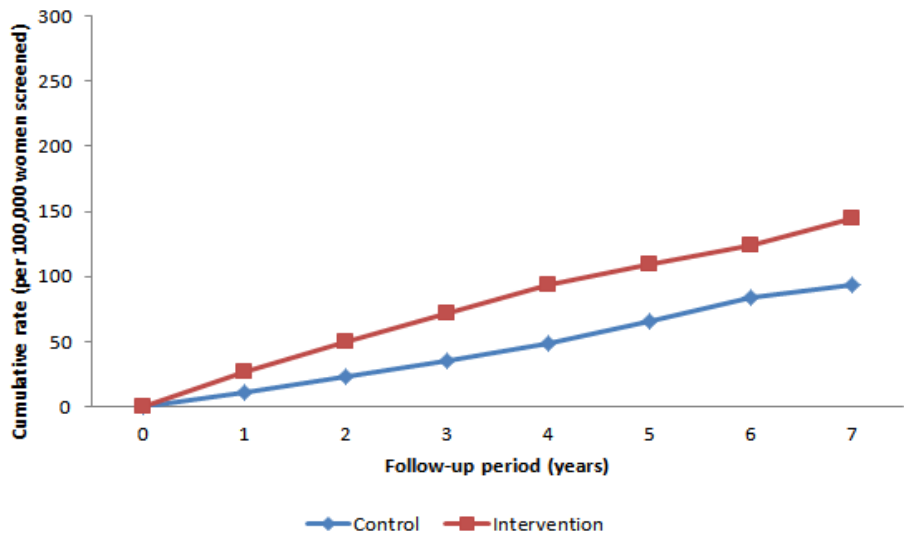


Trivandrum Breast Cancer Screening Study (TBCS)

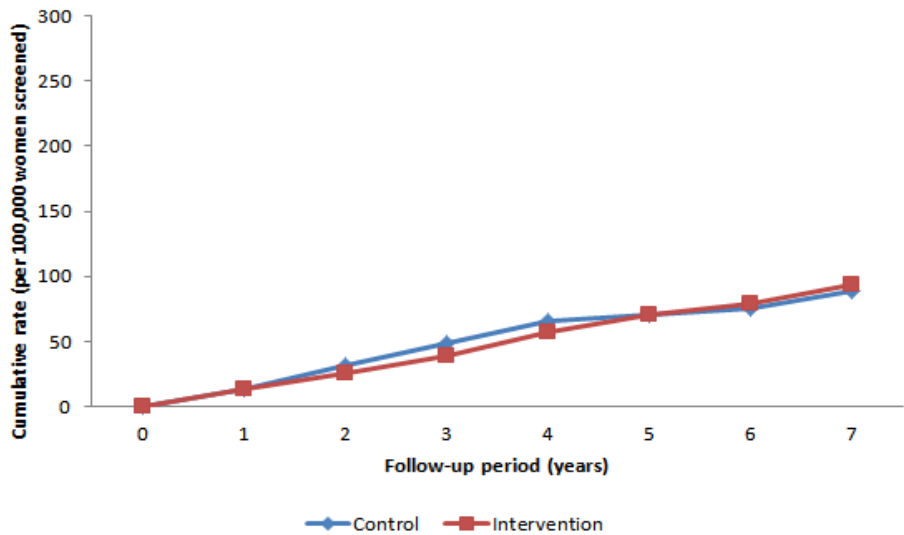
Cumulative breast cancer incidence



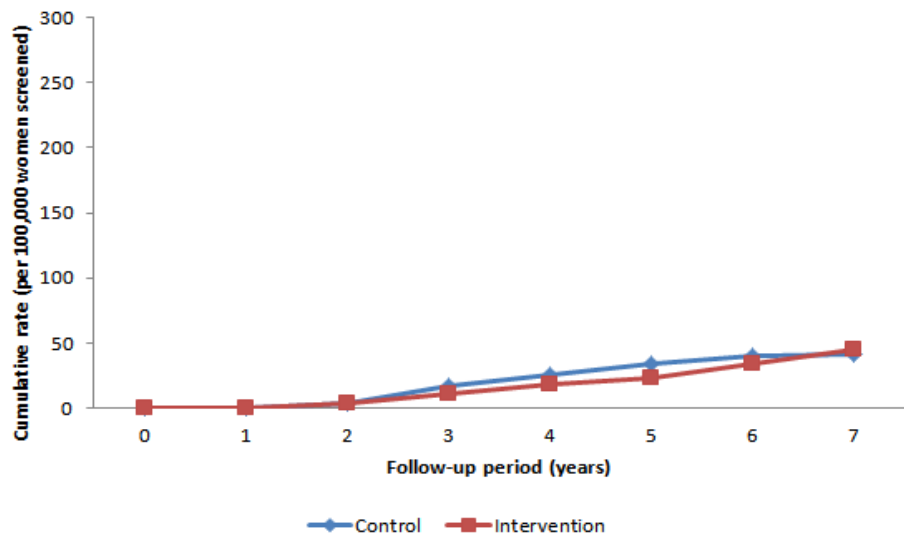
Cumulative early stage (I-II) breast cancer incidence



Cumulative advanced stage (III-IV) breast cancer incidence



Cumulative breast cancer mortality





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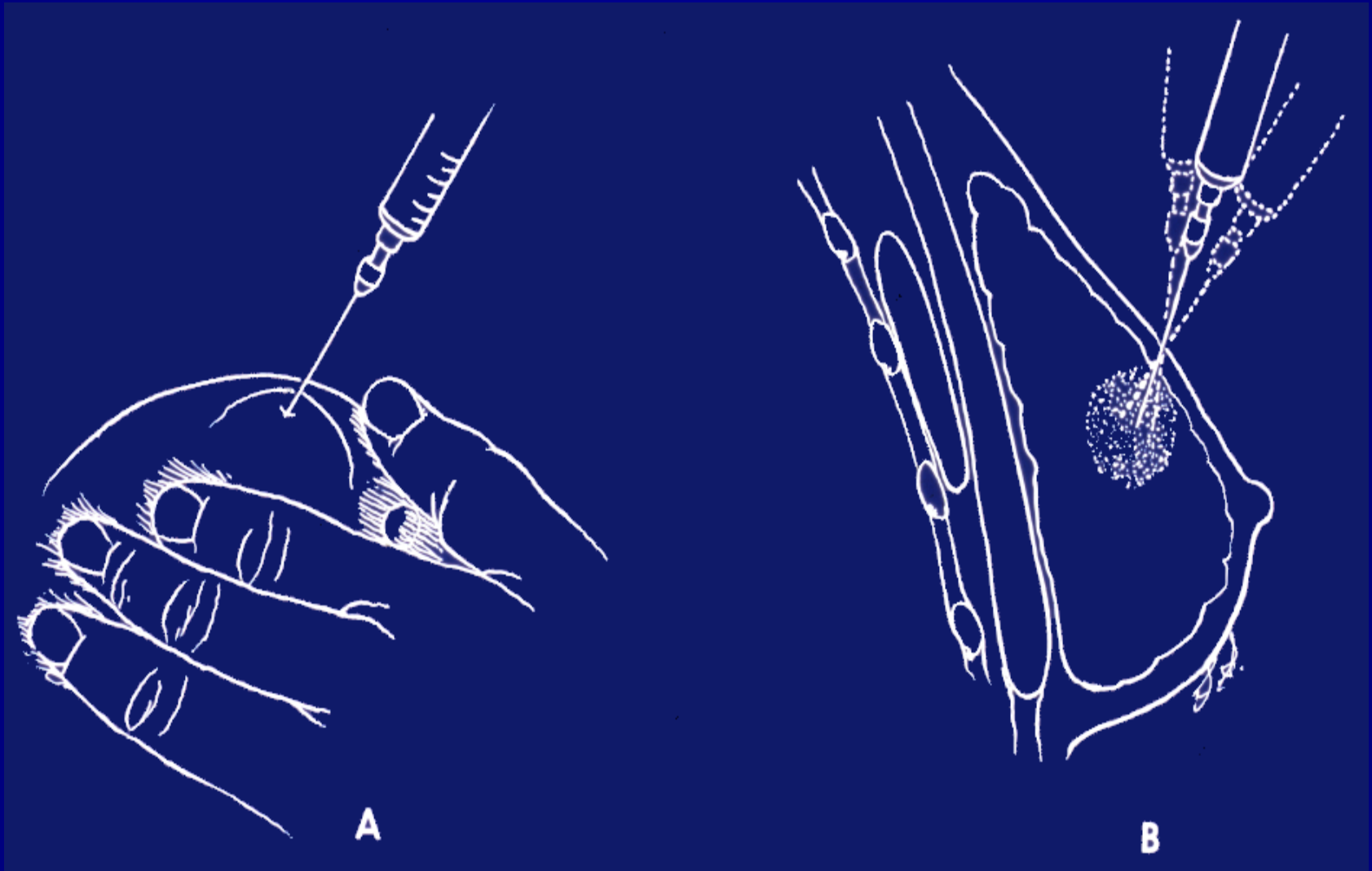
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BREAST CANCER DIAGNOSIS:

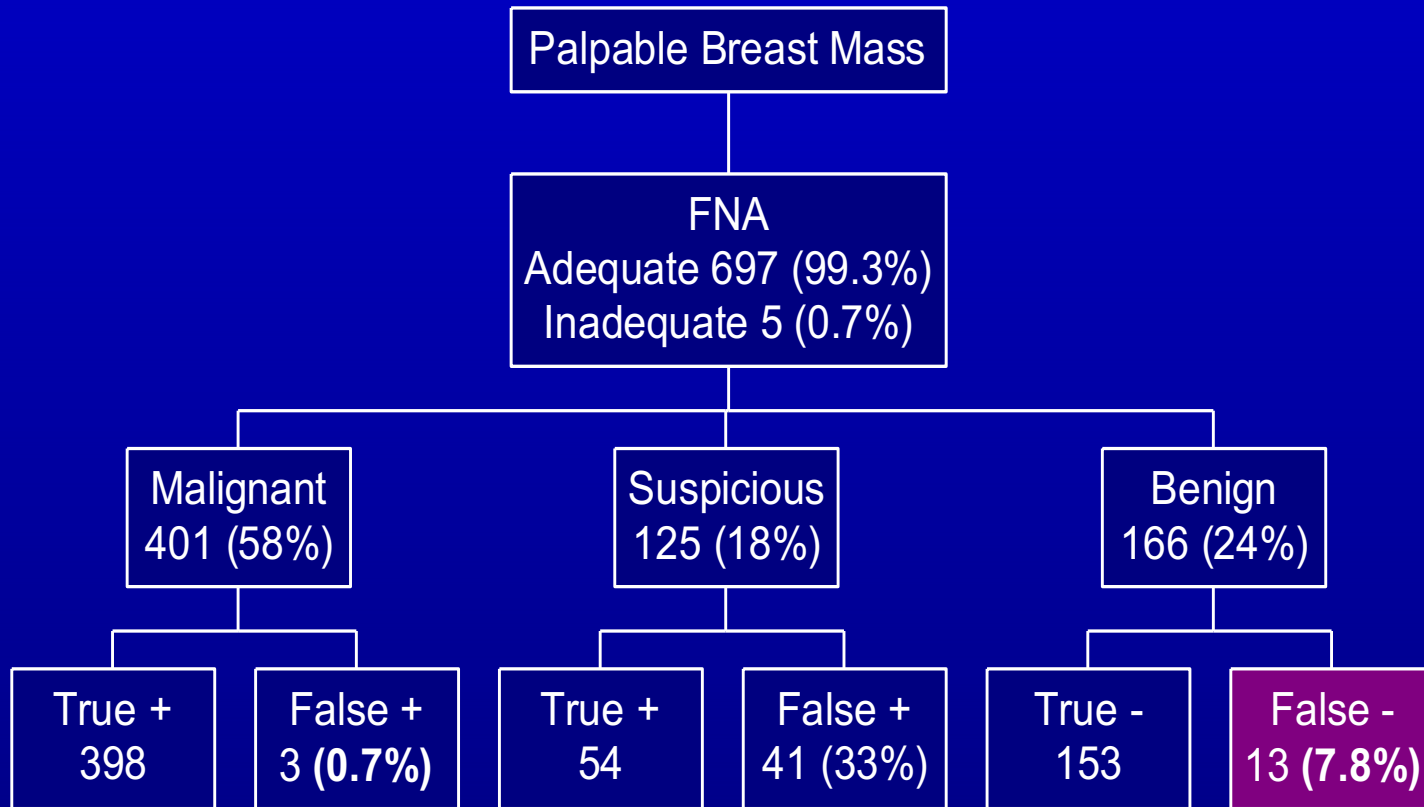
Types of biopsies

- Fine needle aspirations
- Core needle biopsy
- Vacuum-assisted biopsy
- Excisional biopsy

FINE NEEDLE ASPIRATION:

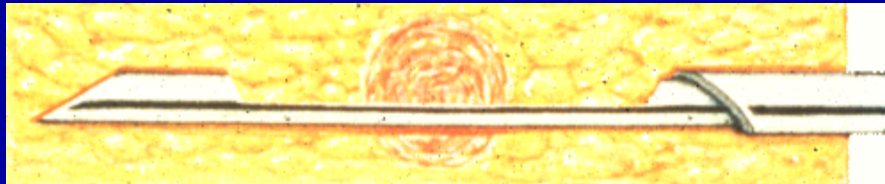
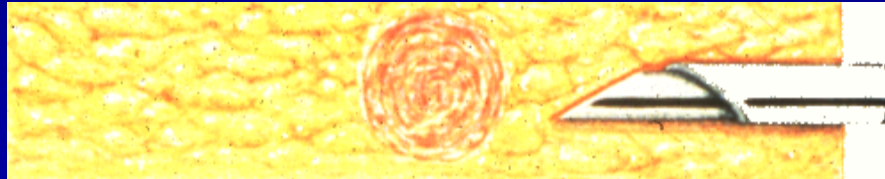


FINE NEEDLE ASPIRATION:

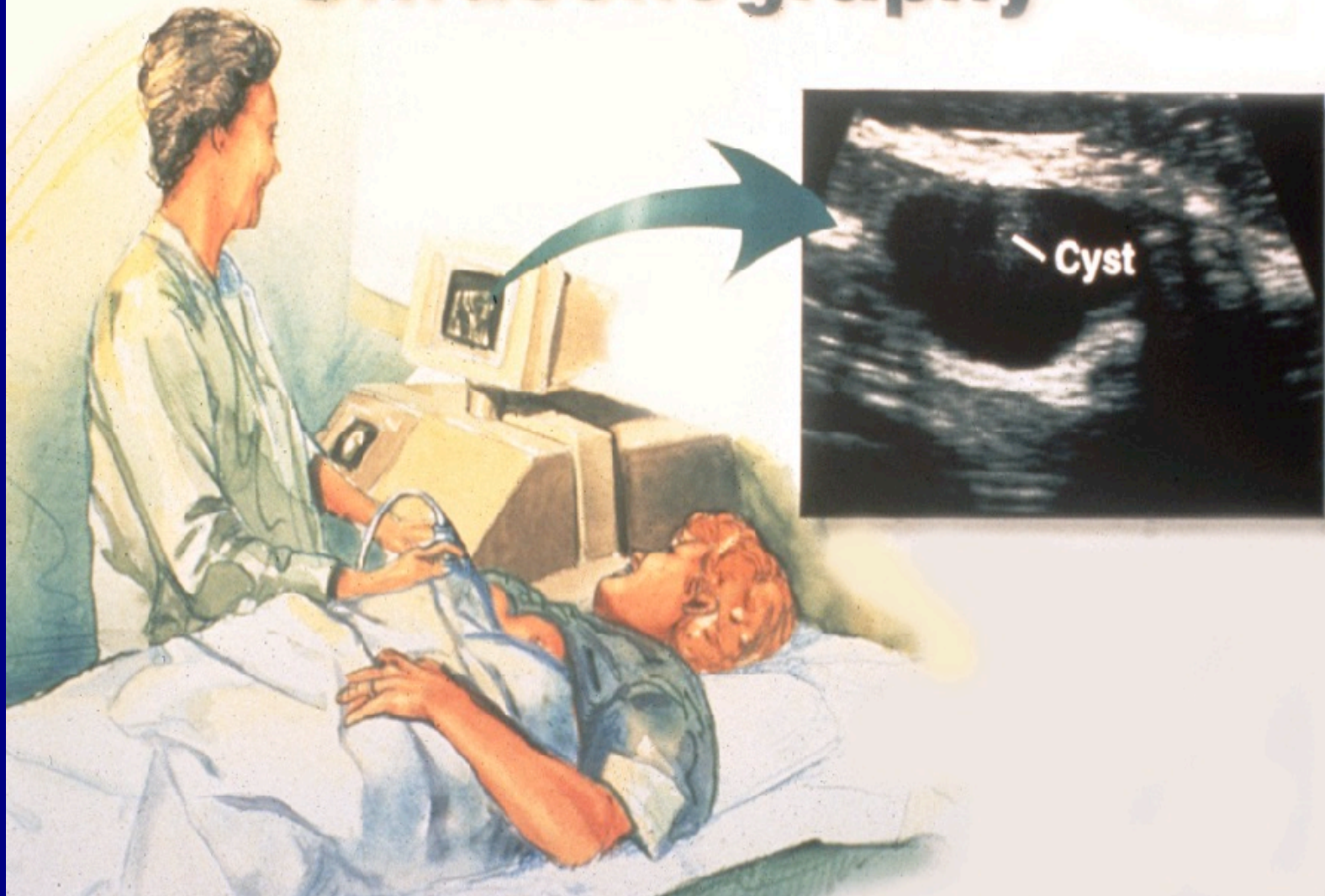


O'Neil, Surgery 122:824, 1997

CORE NEEDLE BIOPSY:

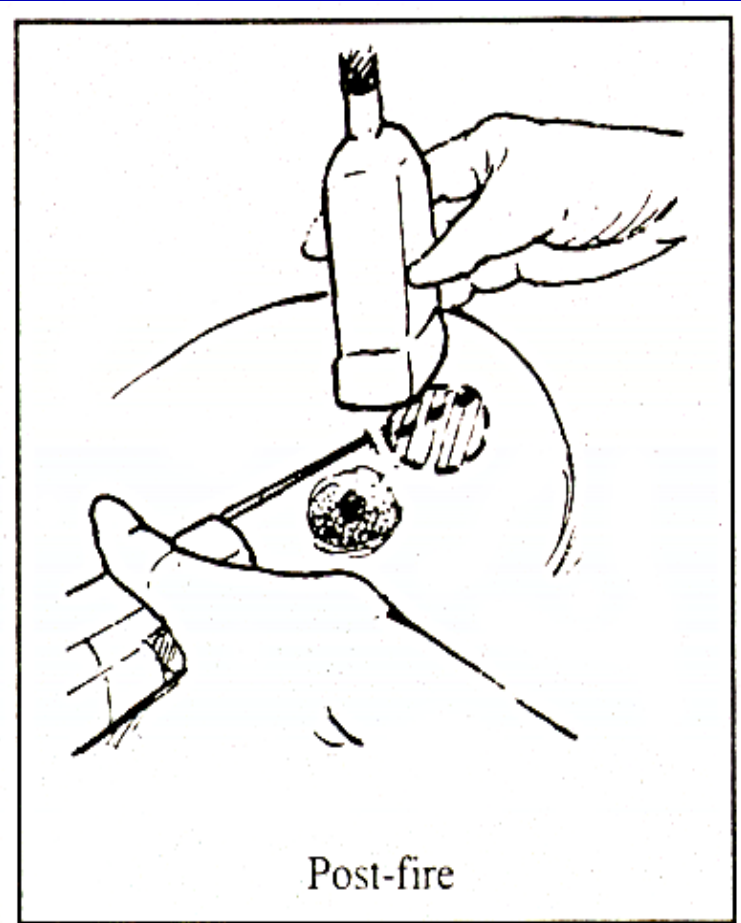
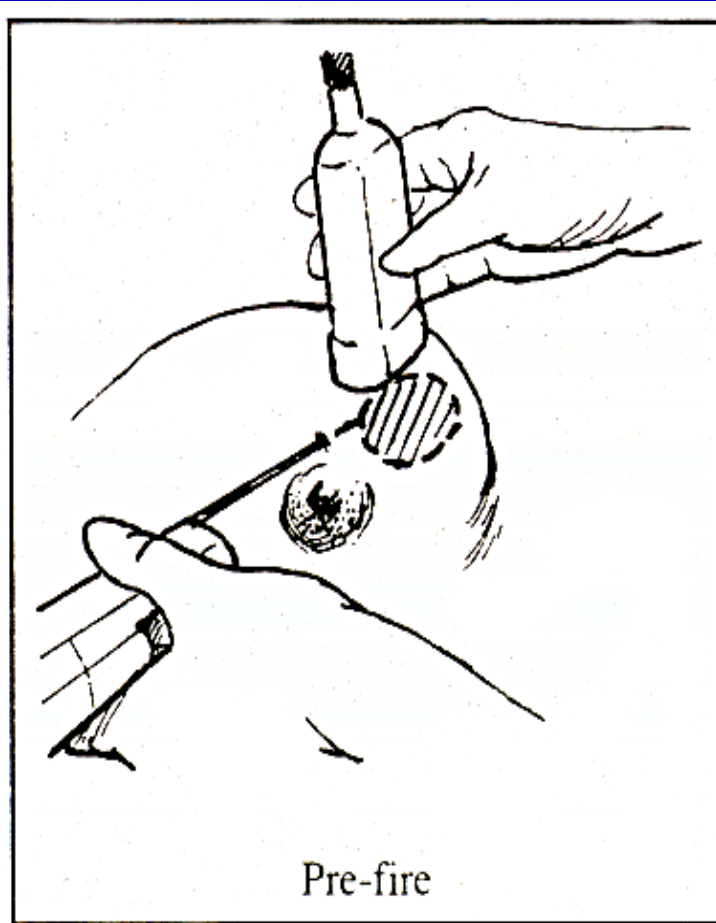


Ultrasonography



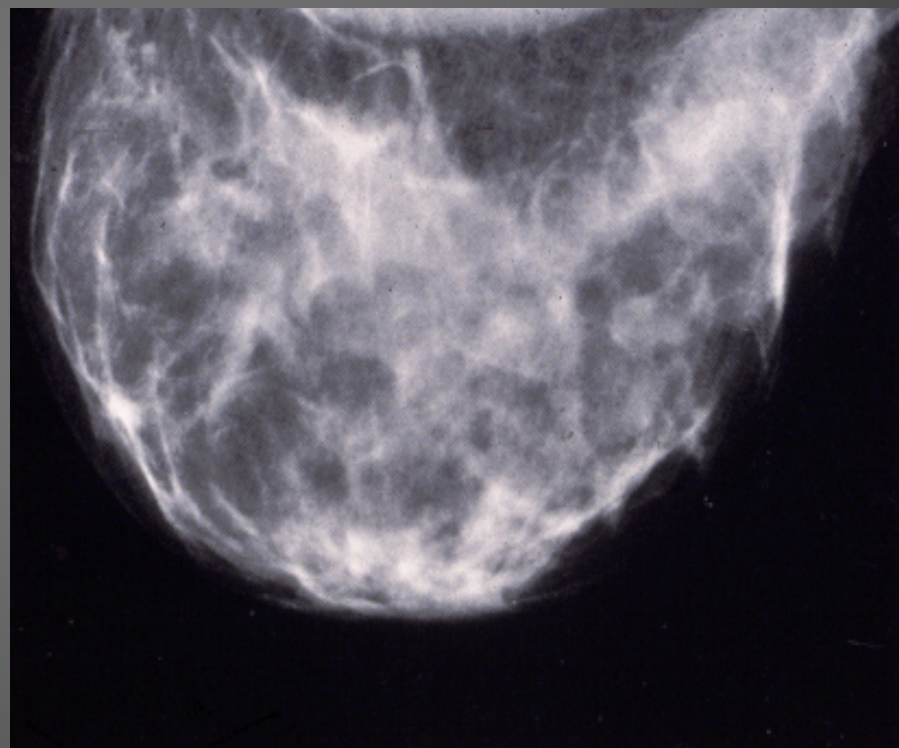
MINIMALLY INVASIVE SAMPLING

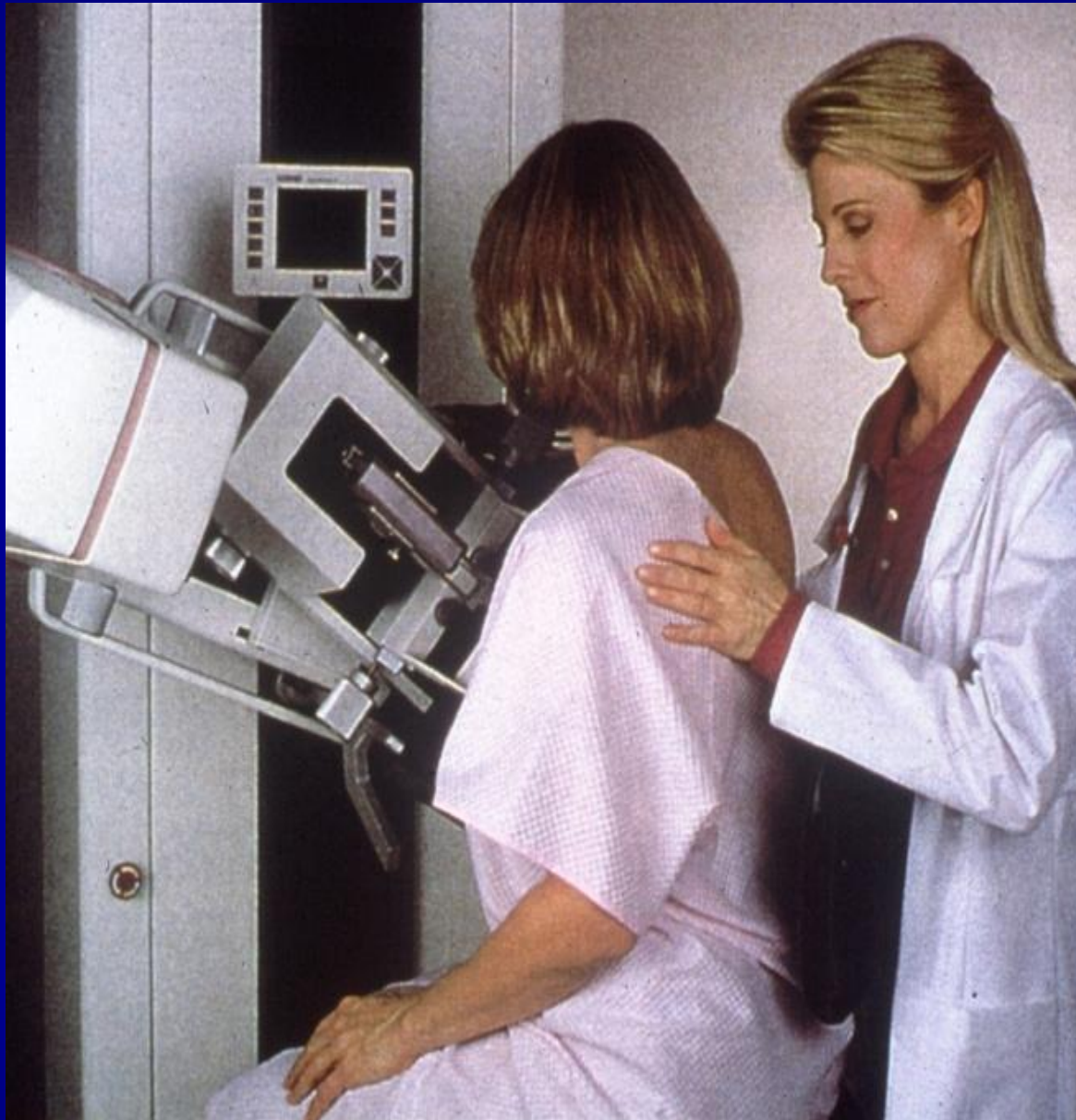
Image Guided Needle Biopsy





SCREENING MAMMOGRAM: Cranio-Caudal (CC) View





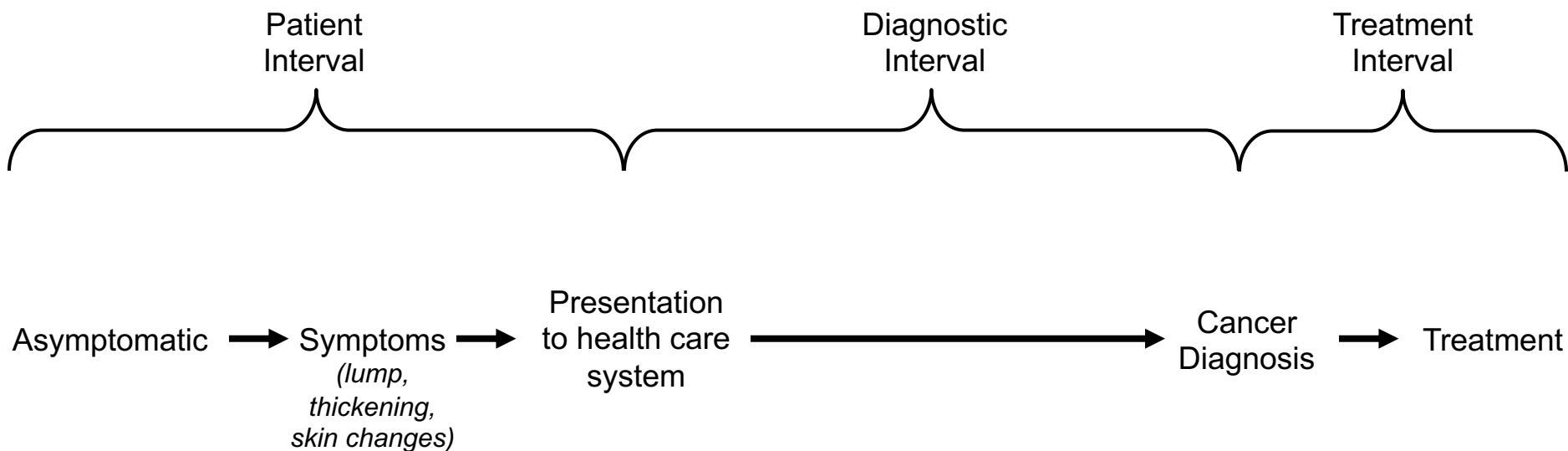
Vacuum Assisted Biopsy System





CANCER CONTROL STRATEGIES

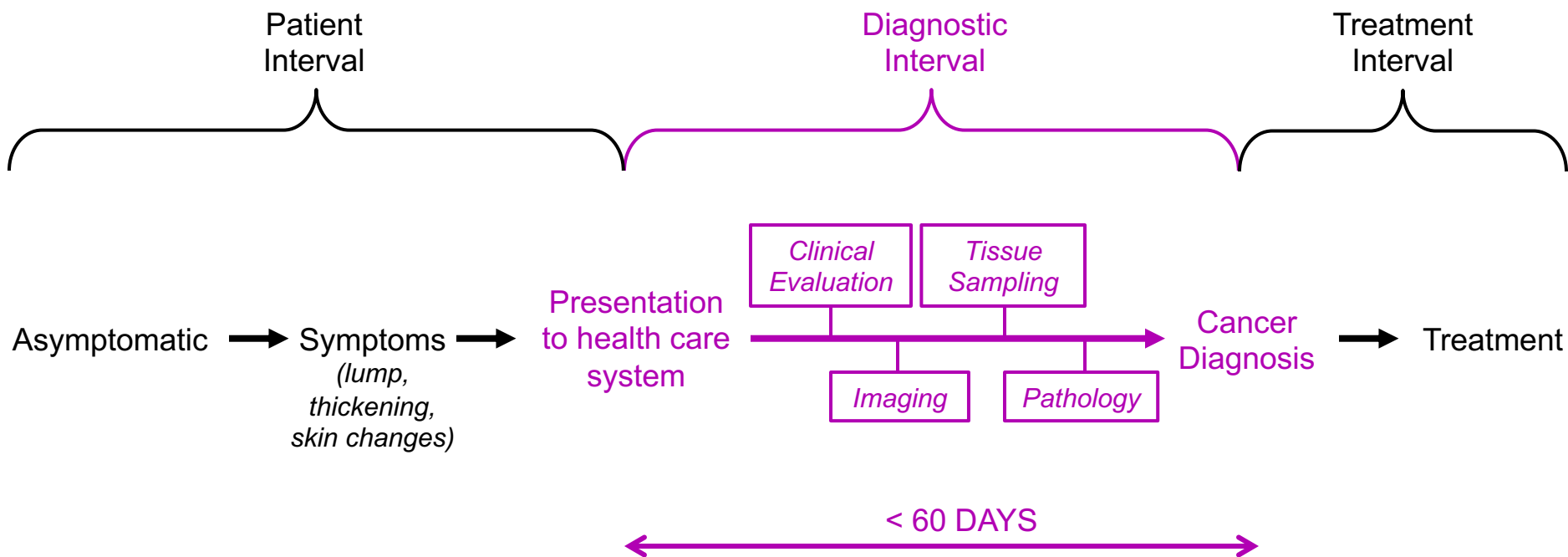
BREAST CANCER PATHWAY





CANCER CONTROL STRATEGIES

BREAST CANCER PATHWAY



SITUATION ANALYSIS

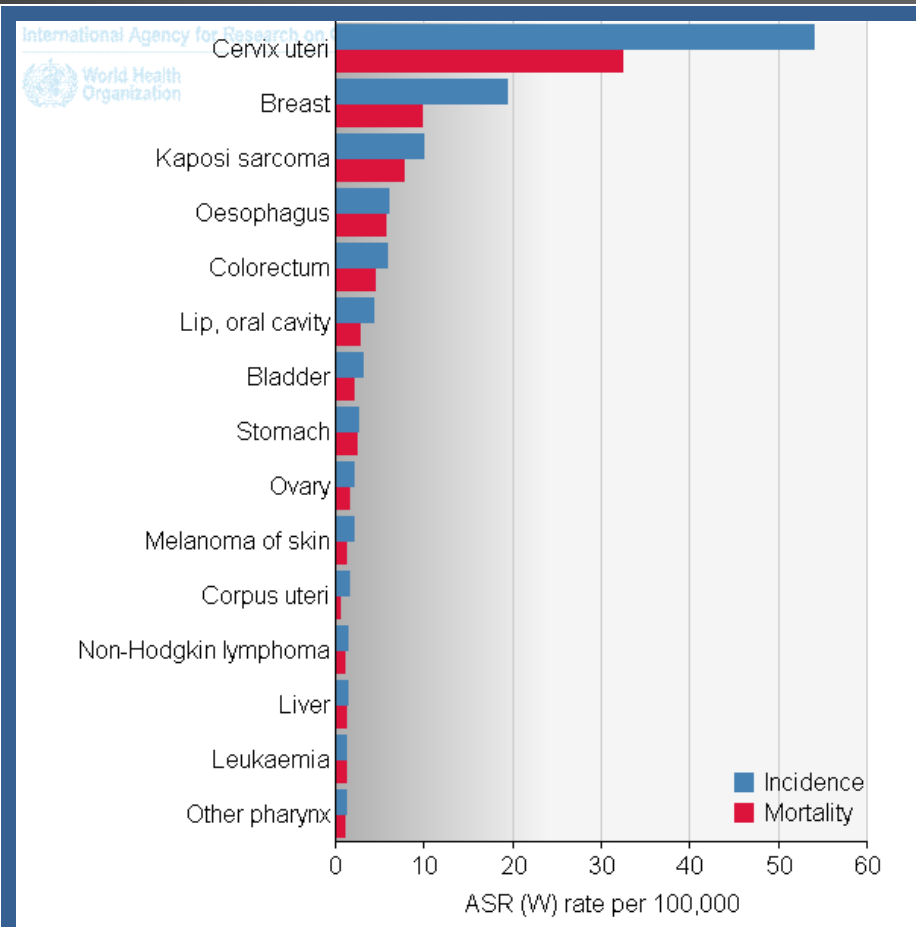
LOW INCOME COUNTRY



Tanzania

SITUATION ANALYSIS

FEMALE CANCER DEMOGRAPHICS - TANZANIA



Source: Globocan 2012; U.N. and World Bank

Tanzania Situation Analysis



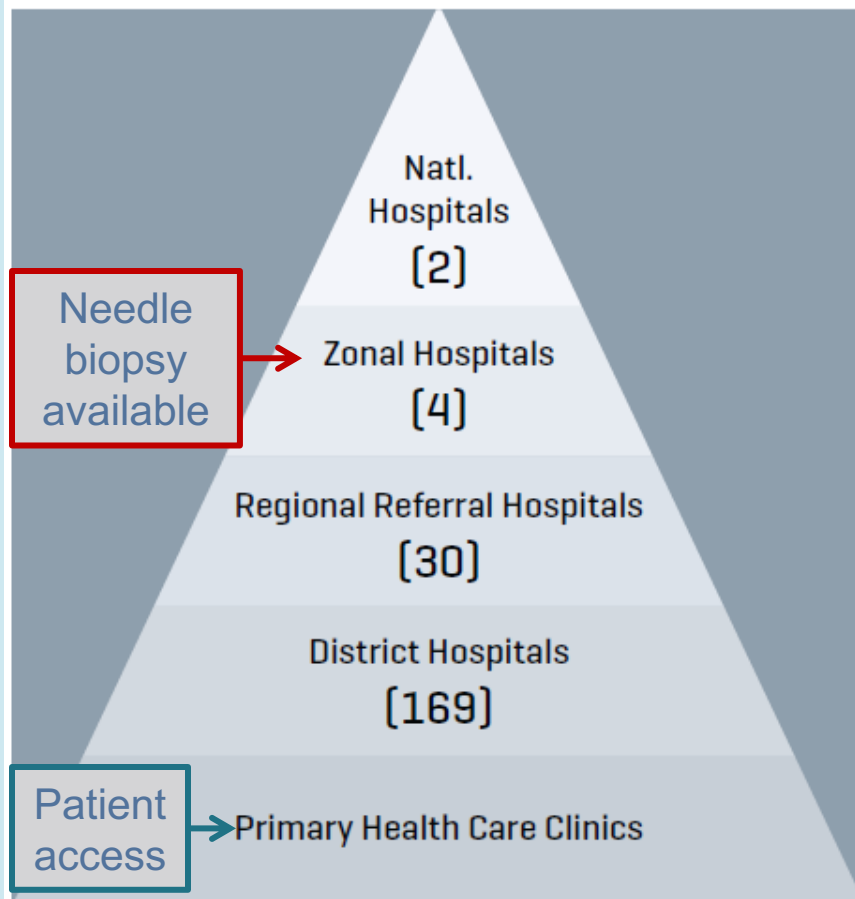
Tanzania Situation Analysis

TANZANIA BREAST HEALTH CARE ASSESSMENT 2017

An Assessment of Breast Cancer
Early Detection, Diagnosis and
Treatment in Tanzania



Figure 2: Tanzanian health care structure



BREAST CANCER EPIDEMIOLOGY

UPPER-MIDDLE INCOME COUNTRY



Mexico

Latin American Early Detection Initiative for Breast Cancer
(LAEDI BRACA)

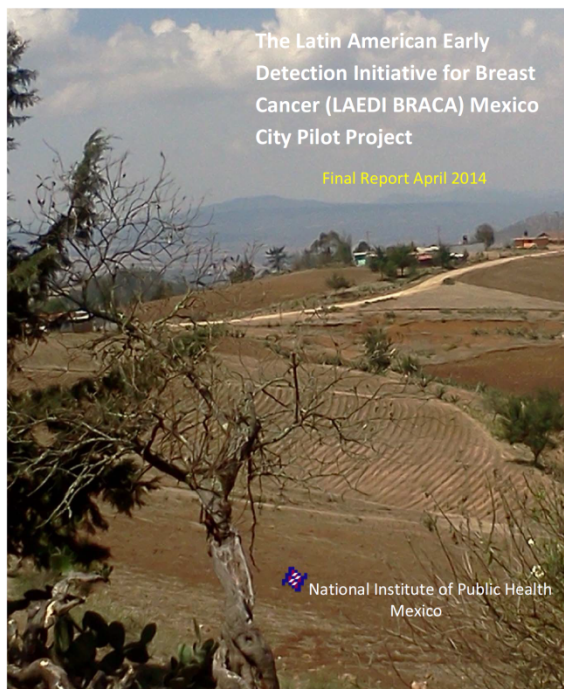
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SITUATION ANALYSIS – MEXICO CITY

READINESS ASSESSMENT– SCREENING



- LAEDI BRACA Partners:
 - Instituto Nacional de Cancerología México (INCAN)
 - Instituto Nacional de Salud Pública de México (INSP)
- PHASE I - Needs assessment for screening
 - Patient-related barriers
 - Clinic-related obstacles
 - Imaging-related obstacles



SITUATION ANALYSIS – MEXICO CITY READINESS ASSESSMENT– KEY FINDINGS

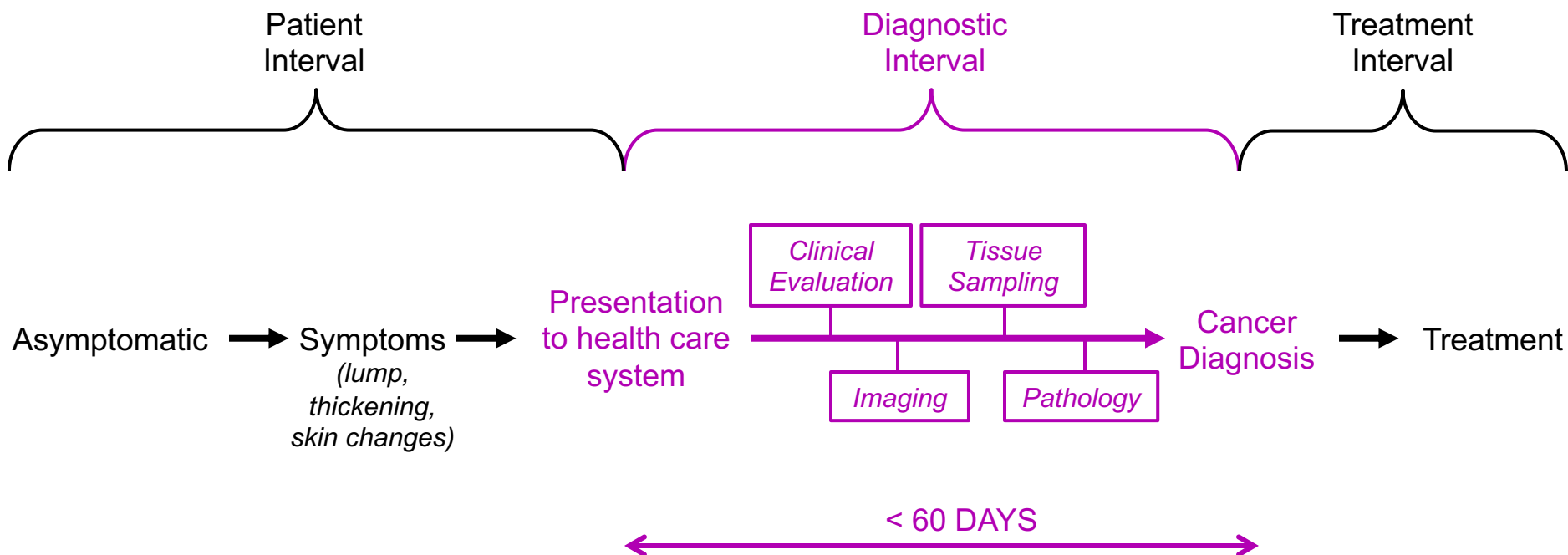
- Awareness education:
 - Knowledge about self-care increased likelihood of having a mammogram (2.4 fold increase)
 - Likelihood of early detection increased (2 fold increase)
- Tele mammography for remote screening:
 - Implemented in Ixmiquilpan (May-Dec 2012)
 - Internet inadequate for transmission of images
 - BIRADS feedback to primary site not established

PI: Gabriela Torres-Mejía (2014)



CANCER CONTROL STRATEGIES

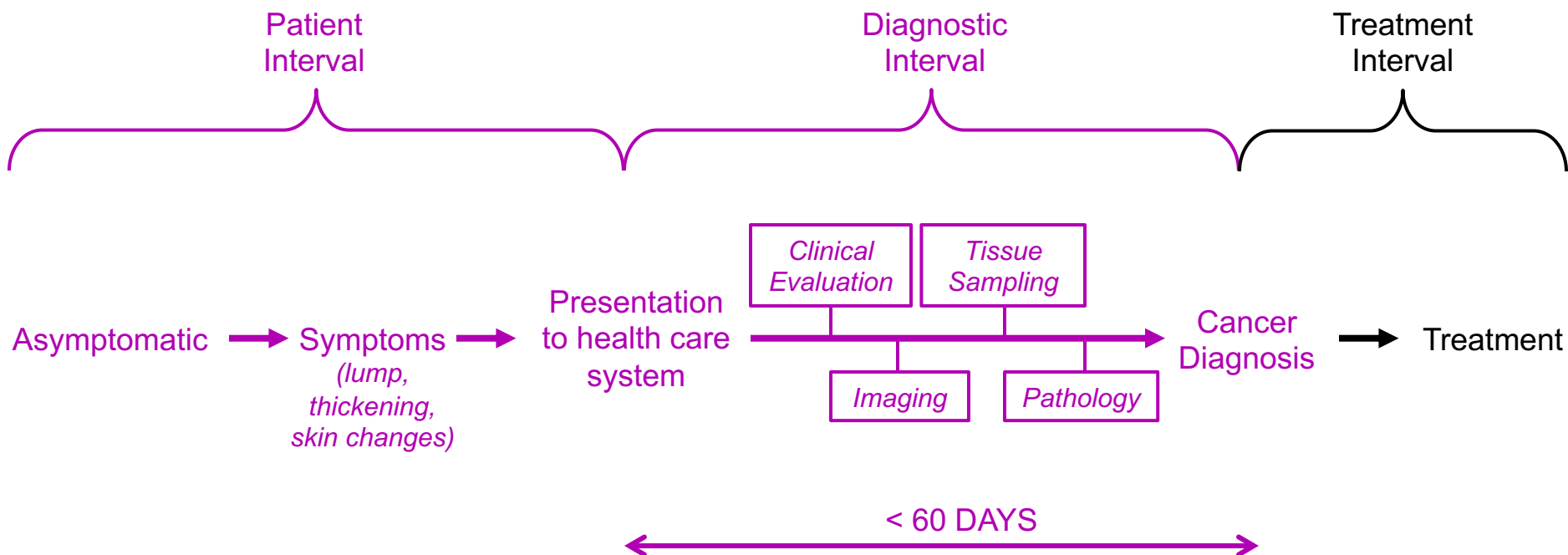
BREAST CANCER PATHWAY





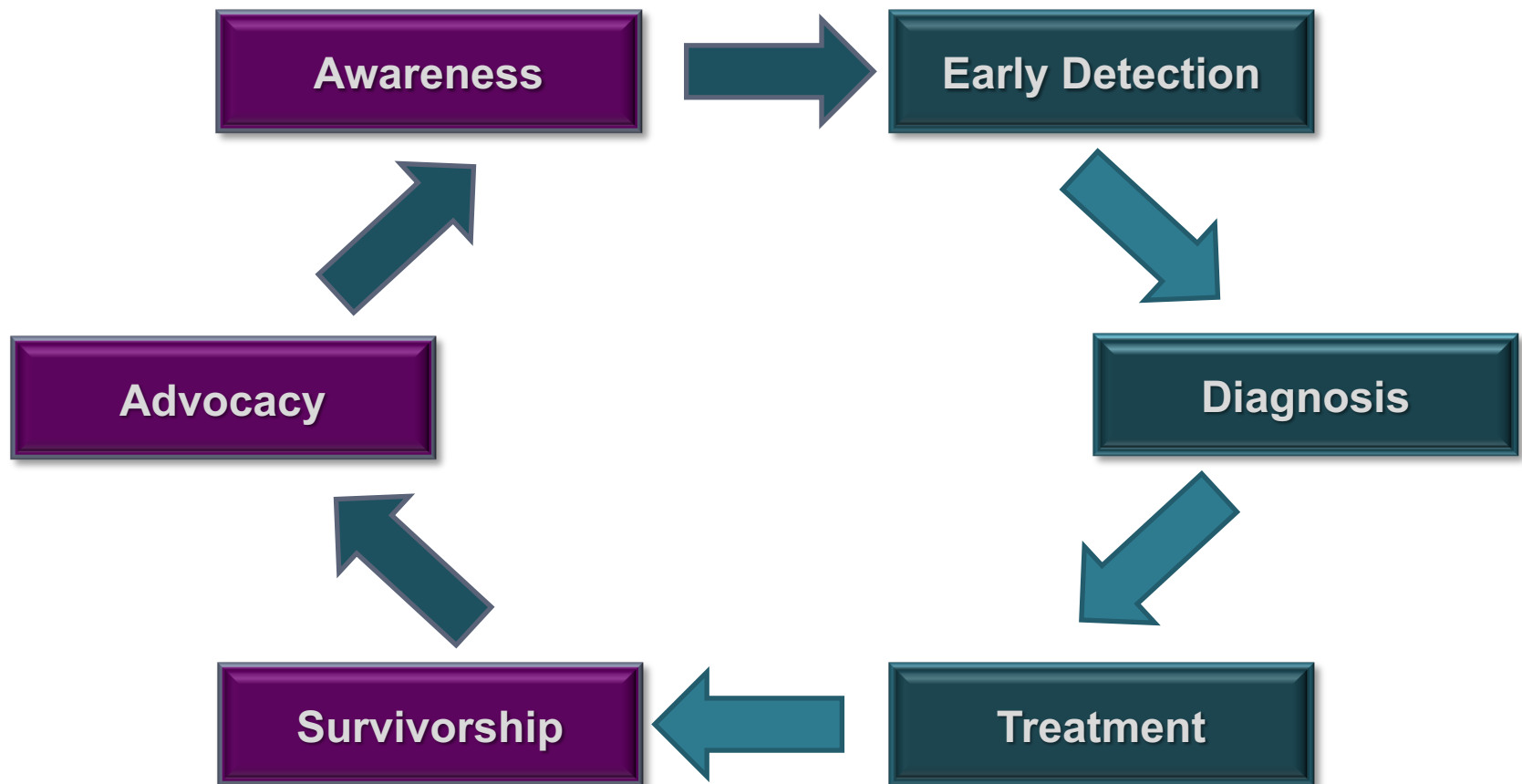
CANCER CONTROL STRATEGIES

BREAST CANCER PATHWAY



Public Participation

Health Care Delivery



LMC IMPLEMENTATION RESEARCH

LOW INCOME COUNTRY



Screening Attitudes in Muslim Women

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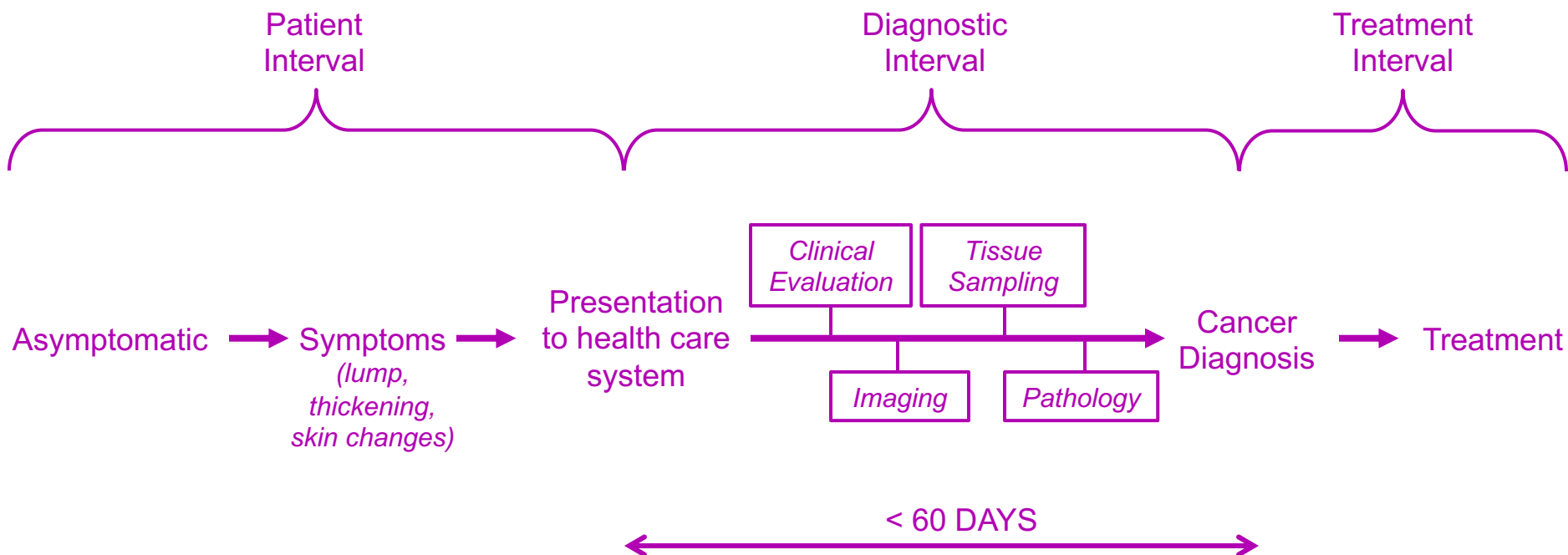
LMC IMPLEMENTATION RESEARCH BREAST CANCER SCREENING IN GAZA

- Survey: 100 women living inside Gaza (WIG) and 55 Gaza women residing outside Gaza (WOG):
 - >90% of both willing to have a diagnostic mammogram for a breast complaint,
 - 86% of WIG and 85% of WOG believe survival increased with early detection,
 - However, only 27% of WIG and 50% WOG were willing to undergo screening mammography.



CANCER CONTROL STRATEGIES

BREAST CANCER PATHWAY





EARLY DIAGNOSIS FOR NIGERIA

SUMMARY

- Breast cancer “prevention” through risk factor modification is not an effective strategy to address the majority of cases.
- Mammographic screening is unaffordable in most countries and does not apply to women in youngest age groups.
- Early diagnosis through clinical detection is practical, affordable and is a necessary prerequisite to screening.
- Situation analysis is necessary to determine where practical obstacles to timely detection and diagnosis exist.



The Breast Health Global Initiative

www.bhgi.info

**BREAST
CANCER
INITIATIVE^{2.5}**

Making breast health a global priority

www.BCI25.org
