Breast Cancer Early Detection Webinar:
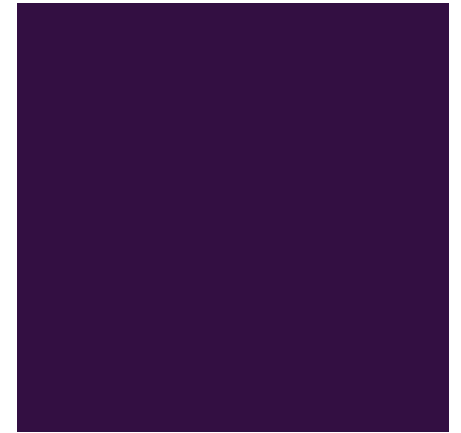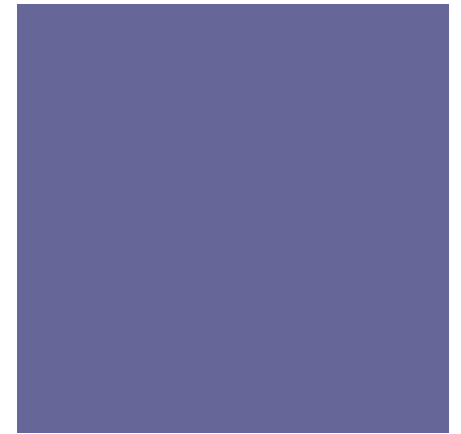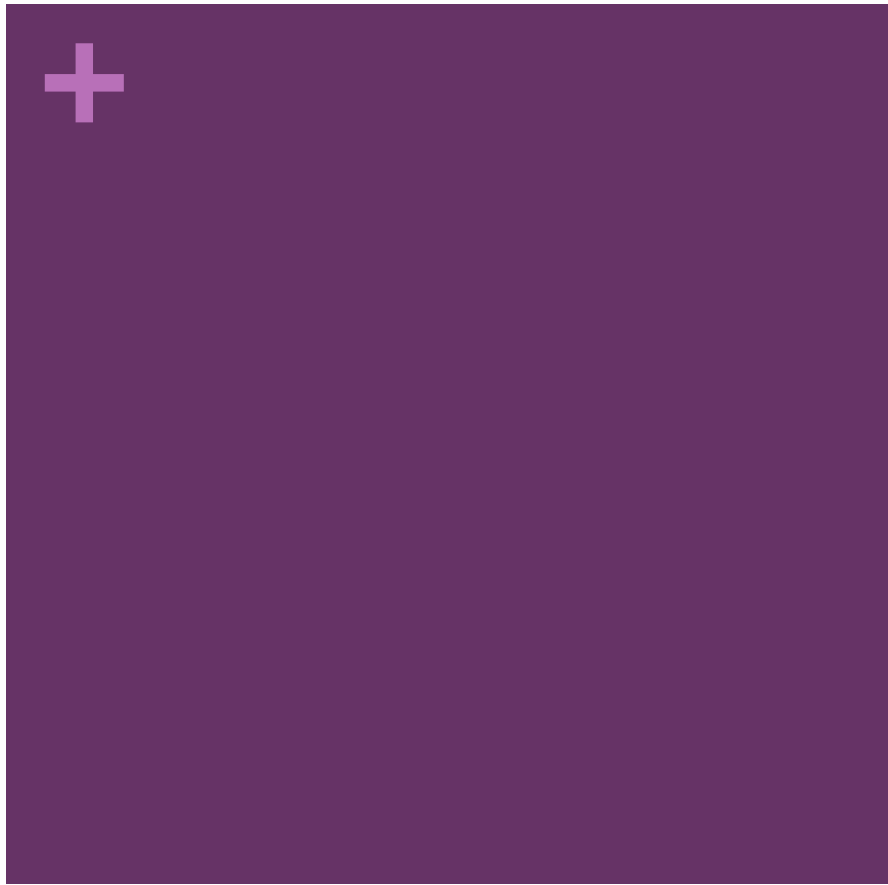
SCIENTIFIC EVIDENCE ON BREAST CANCER SCREENING

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Global Breast Cancer Alliance

FOUNDING PARTNERS:

American Cancer Society

Susan G. Komen for the Cure

Breast Health Global Initiative

Harvard Global Equity Initiative

National Cancer Institute Center for Global Health

Pan American Health Organization (PAHO)

Union for International Cancer Control (UICC)

Breast Cancer Screening

➢ Breast cancer global burden

➢ Early detection and screening

➢ Adapting to existing resources

➢ Solutions and next steps

BREAST CANCER SCREENING

➢ Breast cancer global burden

➢ Early detection and screening

➢ Adapting to existing resources

➢ Solutions and next steps

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GLOBAL BREAST CANCER BURDEN
INCIDENCE AND MORTALITY: 2015-2024

➢ Most common cancer among women

- ❖ 19.7 million cases in next decade
- ❖ 10.6 million cases in less developed countries
- ❖ By 2020, over 1 million cases per year in LMCs

➢ Most common cancer killer among women

- ❖ 5.8 million women will die in next decade
- ❖ 3.9 million deaths in less developed countries
- ❖ >1.5 million deaths premature and preventable

SOURCE: Globocan 2012 (IARC)

BREAST CANCER INCIDENCE (1975-2011)
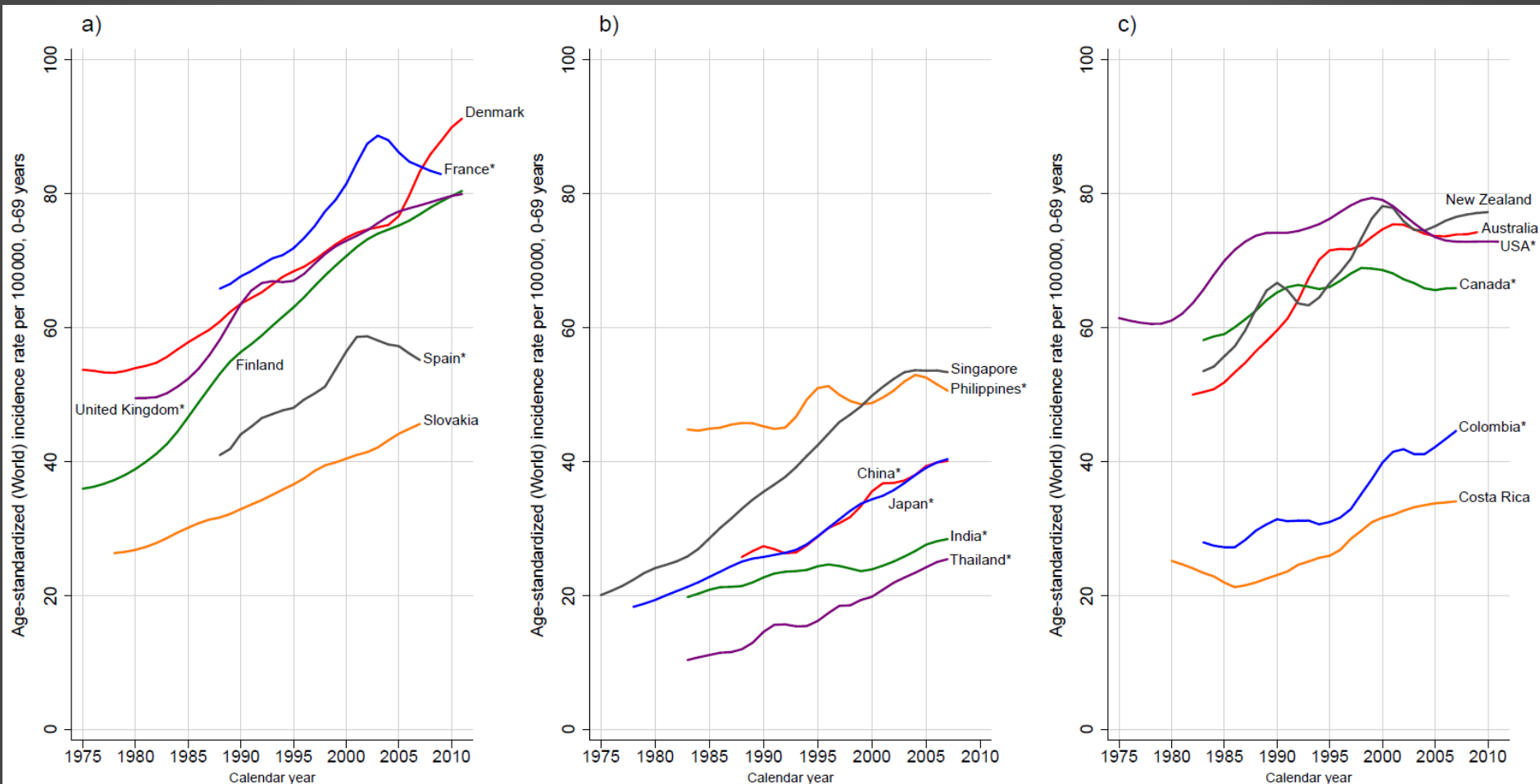
*: France (Bas-Rhin, Calvados, Doubs, Isere, Haut-Rhin, Herault, Somme and Tarn), Canada (All provinces but Quebec), China (Hong Kong and Shanghai), Colombia (Cali), India (Chennai and Mumbai), Japan (Miyagi, Nagasaki and Osaka), Philippines (Manila), Spain (Granada, Murcia, Navarra and Tarragona), Thailand (Chiang Mai), United Kingdom (England), United States (SEER)

SOURCE: Globocan 2012 (IARC)

BREAST CANCER DEATHS (1975-2011)
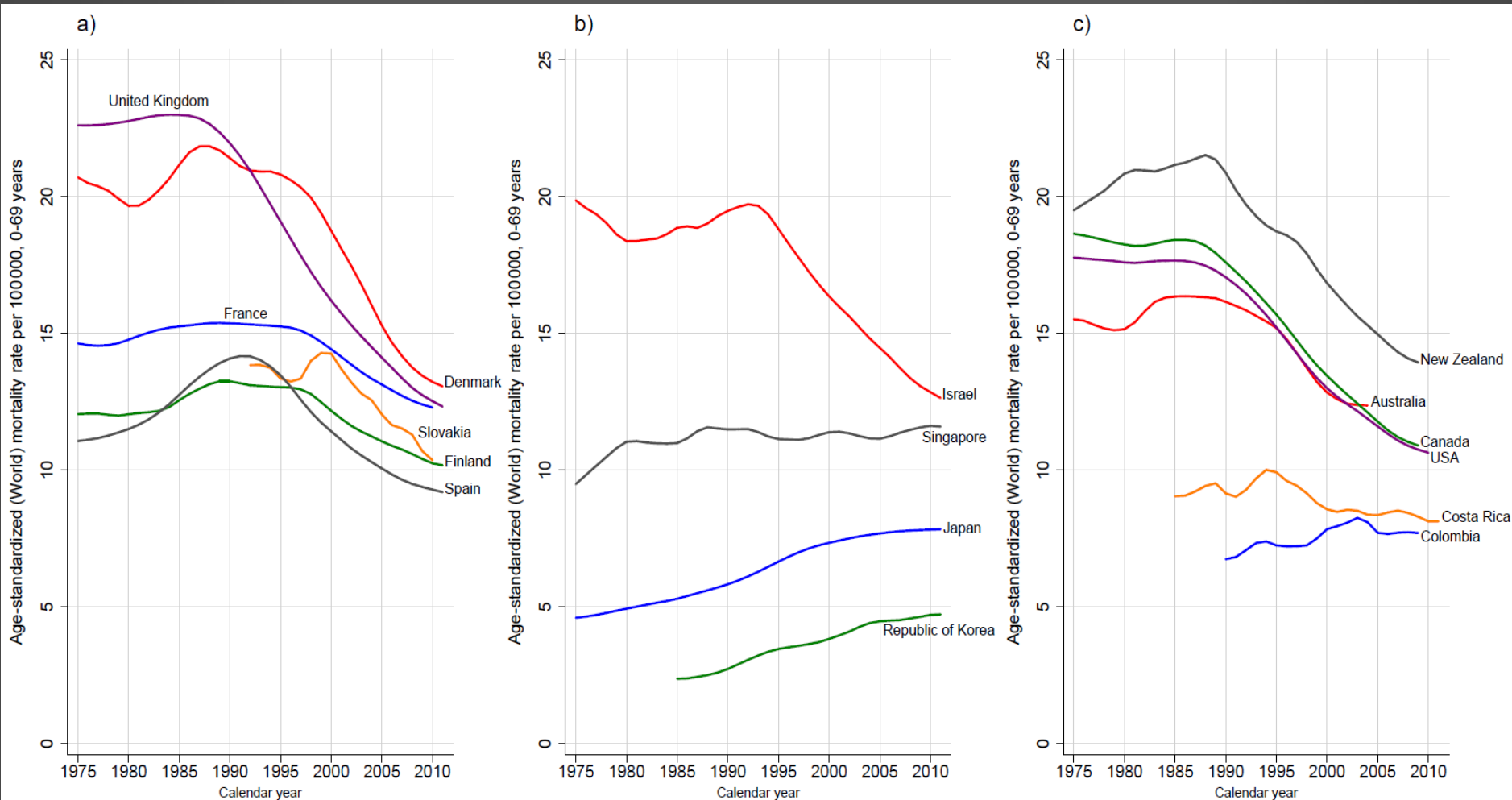
SOURCE: Globocan 2012 (IARC)

BREAST CANCER EPIDEMIOLOGY

STAGE AT DIAGNOSIS: UNITED STATES VS. INDIA

STAGE	EXTENT	5 year SURVIVAL	DISTRIBUTION	
			USA	INDIA
0	Noninvasive	100%	**16%**	----
I	Early stage disease	100%	**40%**	1%
II	Early stage disease	86%	**34%**	23%
III	Locally advanced	57%	6%	**52%**
IV	Metastatic disease	20%	4%	**24%**

USA:
90% DCIS or early staged invasive disease at diagnosis

INDIA:
76% locally advanced or metastatic at diagnosis

Sources: SEER Survival Monograph (NCI), 2007; Chopra, Cancer Institute Chennai, 2001

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BREAST CANCER SCREENING

➢ Breast cancer global burden

➢ Early detection and screening

➢ Adapting to existing resources

➢ Solutions and next steps

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BREAST CANCER SCREENING

➢ Breast cancer global burden

➢ Early detection and screening

➢ Adapting to existing resources

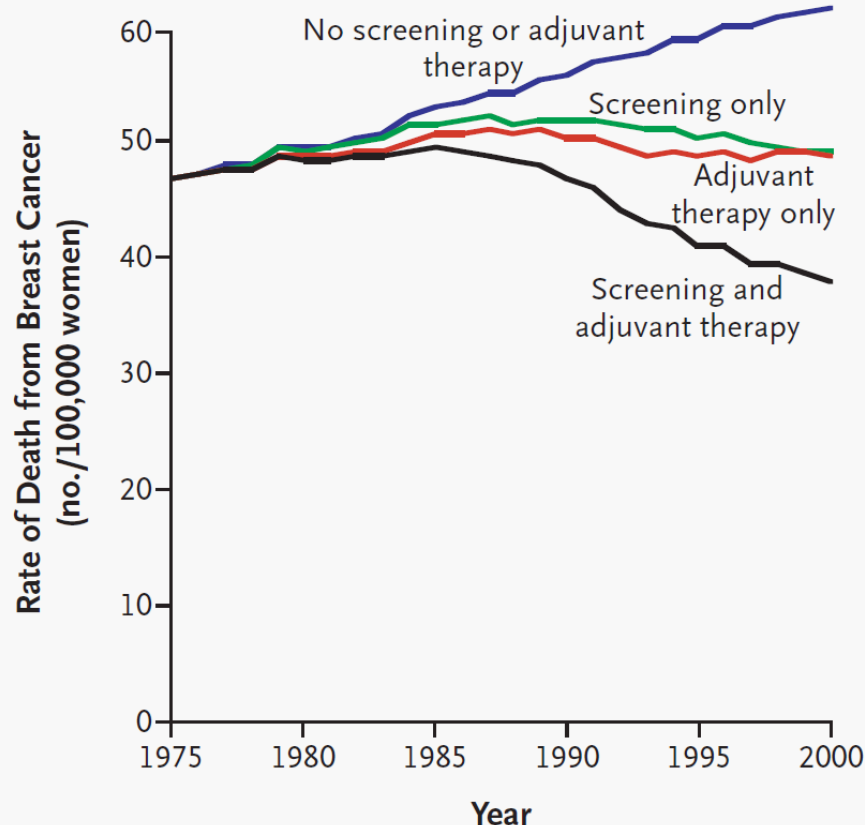➢ Solutions and next steps

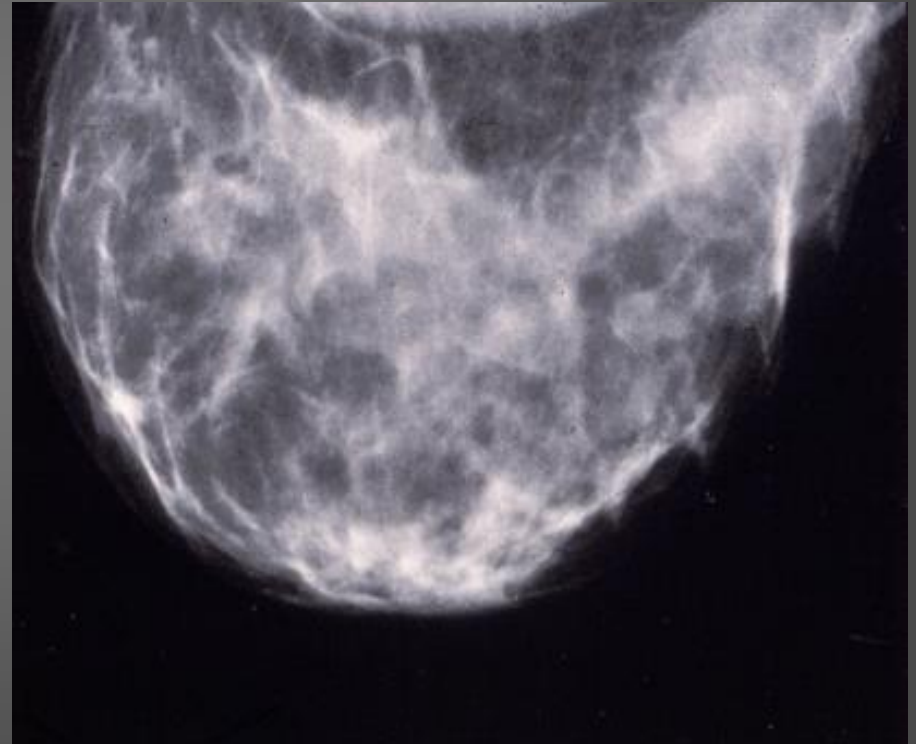# MORTALITY MODELING
SCREENING AND ADJUVANT THERAPY

- Early detection is essential to improving outcome.

- Early detection works when followed by appropriate breast cancer treatment.

- To save lives, screening programs must be linked to timely, effective treatment.
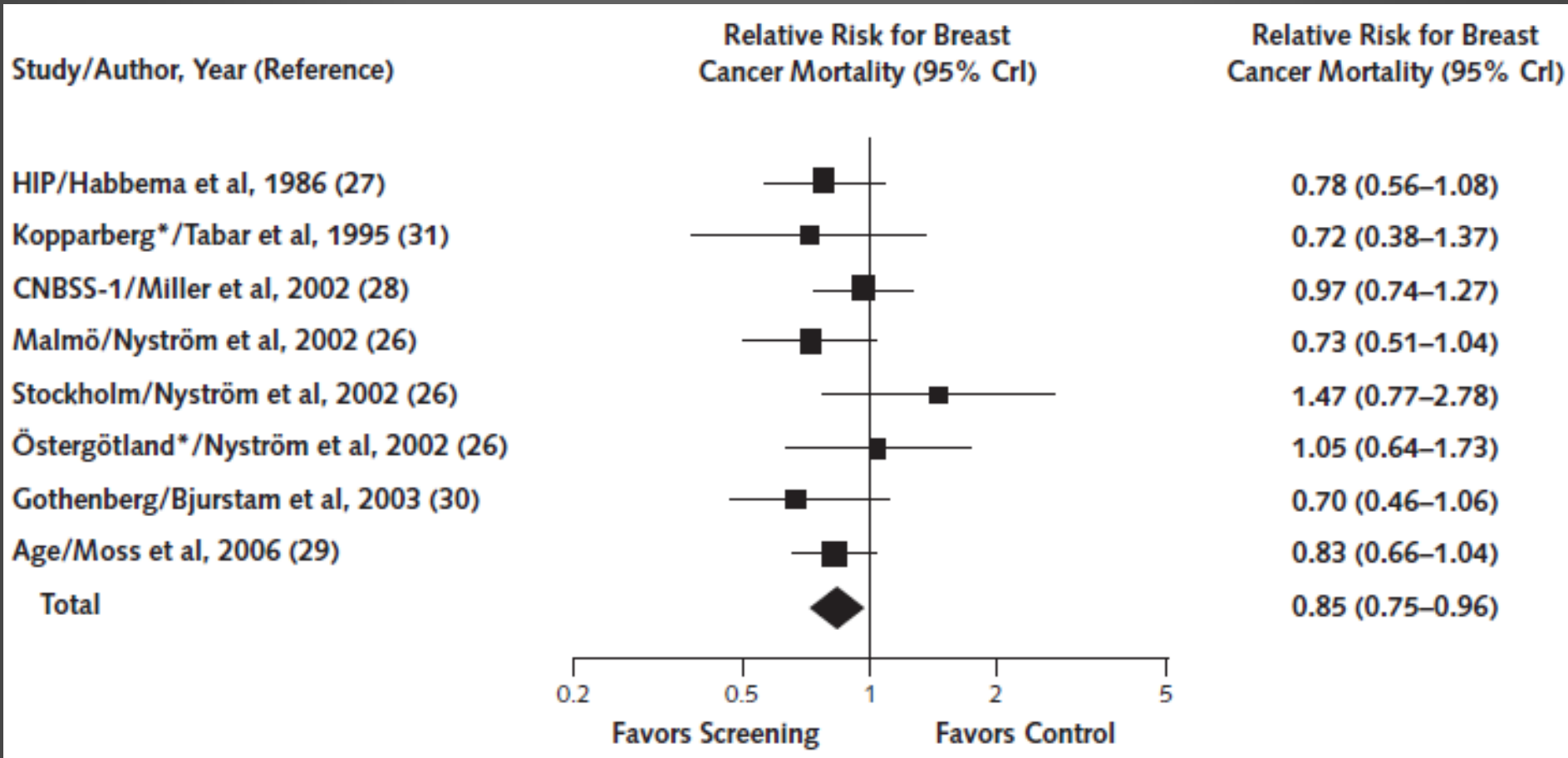

Berry, et al. (CISNET), NEJM 353:1784, 2005

SCREENING MAMMOGRAM:
Cranio-Caudal (CC) View

RANDOMIZED SCREENING TRIALS
BREAST CANCER MORTALITY REDUCTION

Study/Author, Year (Reference)	Relative Risk for Breast Cancer Mortality (95% CrI)	Relative Risk for Breast Cancer Mortality (95% CrI)
HIP/Habbema et al, 1986 (27)		0.78 (0.56–1.08)
Kopparberg*/Tabar et al, 1995 (31)		0.72 (0.38–1.37)
CNBSS-1/Miller et al, 2002 (28)		0.97 (0.74–1.27)
Malmö/Nyström et al, 2002 (26)		0.73 (0.51–1.04)
Stockholm/Nyström et al, 2002 (26)		1.47 (0.77–2.78)
Östergötland*/Nyström et al, 2002 (26)		1.05 (0.64–1.73)
Gothenberg/Bjurstam et al, 2003 (30)		0.70 (0.46–1.06)
Age/Moss et al, 2006 (29)		0.83 (0.66–1.04)
Total		0.85 (0.75–0.96)

0.2   0.5   1   2   5

Favors Screening   Favors Control

Nelson et al, Ann Intern Med 151:727, 2009

Global status report
on noncommunicable diseases
2010

World Health Organization

- ➢ 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

IARC WORKING GROUP 2014
BREAST CANCER SCREENING

➢ **Mammography screening reduces breast cancer mortality**

  ➢ Women aged 50 -74 years (sufficient)

  ➢ Women aged 45 – 49 years (limited / sufficient)

  ➢ Women aged 40 – 44 years (limited)

➢ Mammographic screening for women aged 50 – 69 can be cost effective in countries with high breast cancer incidence (sufficient)

➢ Mammographic screening can be cost effective in low and middle income countries (limited)

IARC Handbook, in preparation

Breast Cancer Screening

➢ Breast cancer global burden

➢ Early detection and screening

➢ Adapting to existing resources

➢ Solutions and next steps

Breast Cancer Screening

➢ Breast cancer global burden

➢ Early detection and screening

➢ Adapting to existing resources

➢ Solutions and next steps

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 ts present with advanced disease
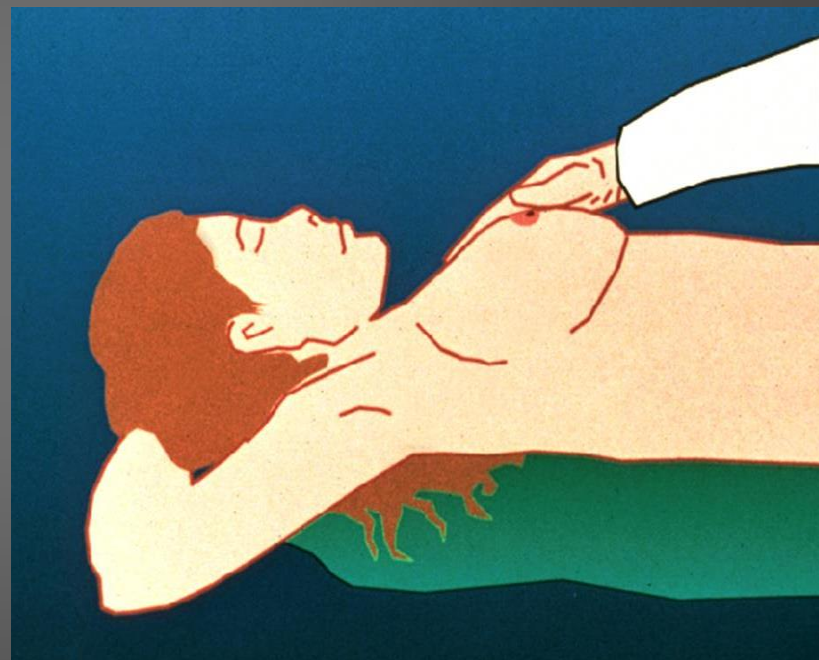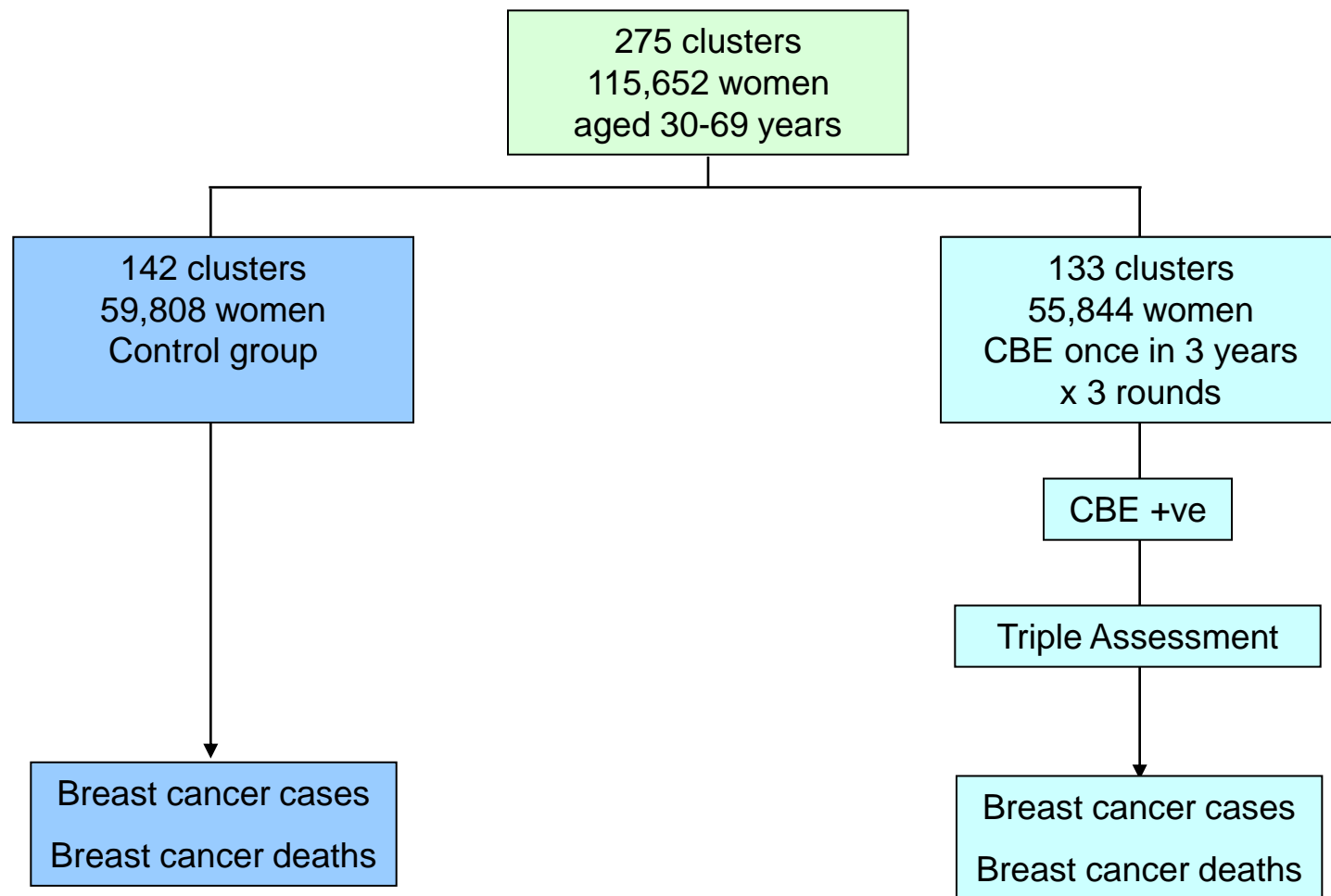
IARC Overview and India Case Study:
Recent results from a randomized clinical breast examination trial in India

R. Sankaranarayanan MD
International Agency for Research on Cancer
Lyon, France

Special Advisor on Cancer Control
Head, Early Detection and Prevention Section (EDP)
Head, Screening Group (SCR)

http://screening.iarc.fr/

Study design

275 clusters
115,652 women
aged 30-69 years

142 clusters
59,808 women
Control group

133 clusters
55,844 women
CBE once in 3 years
x 3 rounds

CBE +ve

Triple Assessment

Breast cancer cases

Breast cancer deaths

Breast cancer cases

Breast cancer deaths

International Agency for Research on Cancer

World Health Organization

Sankaranarayanan et al., J Natl Cancer Inst. 2011;103:1476–80

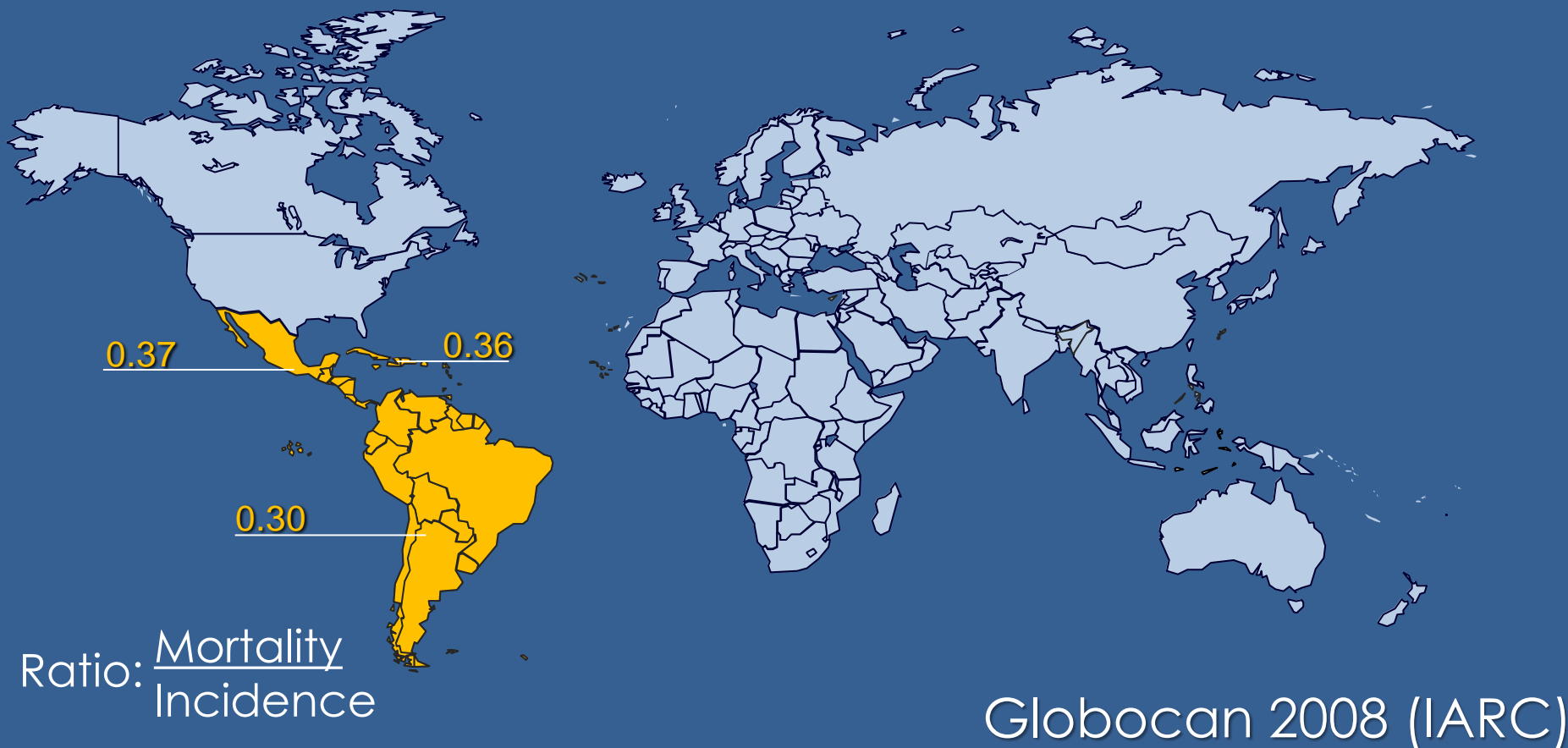*In collaboration with Regional Cancer Centre (RCC), Trivandrum, India*

Trivandrum Breast Cancer Screening Study (TBCS)

Survival breast cancer patients in the control and intervention groups
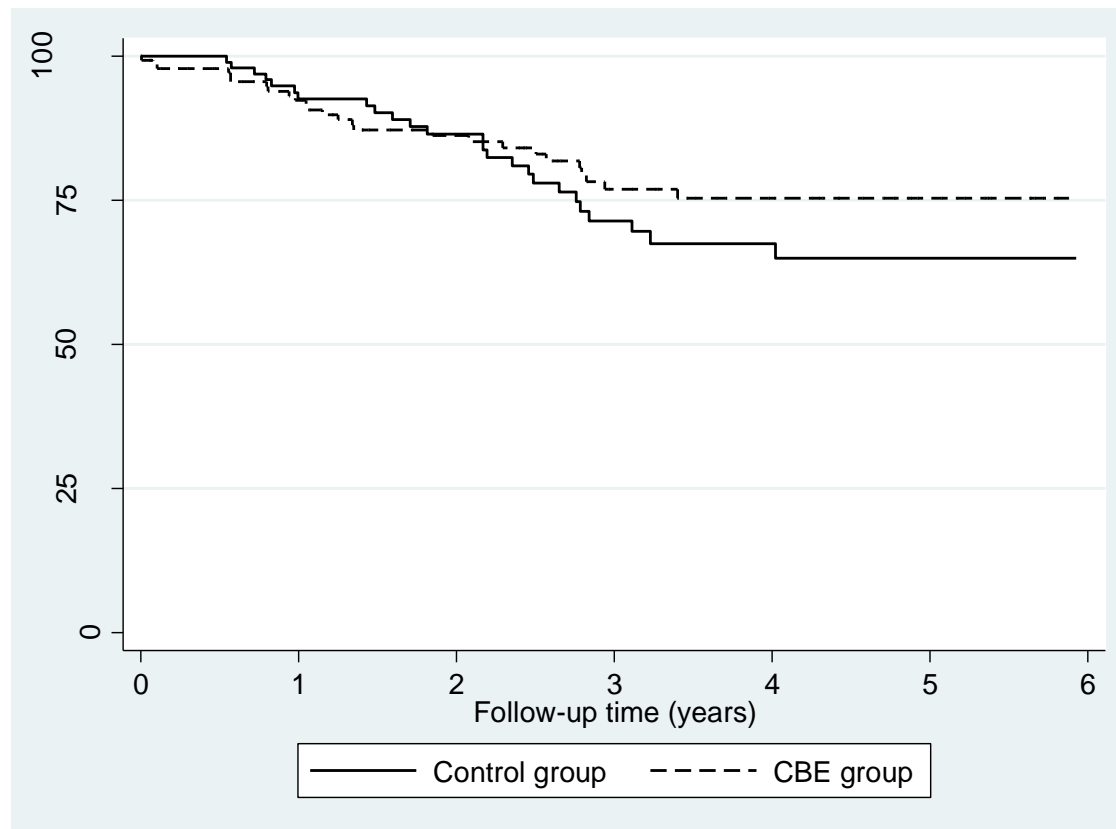
LMC IMPLEMENTATION RESEARCH
LATIN AMERICAN COUNTRIES – MIDDLE RESOURCE

0.37

0.36

0.30

Ratio: Mortality / Incidence

Globocan 2008 (IARC)

SOUTH + CENTRAL AMERICA ESTIMATES 2008:
105,900 cases; 33,600 deaths

DETECTION STRATEGIES AND GOALS:

EARLY DETECTION		BASIC	LIMITED	ENHANCED
	Public Education and Awareness	• Development of culturally sensitive, linguistically appropriate local education programs for target populations to teach value of early detection, breast cancer risk factors and breast health awareness (education + self-examination)	• Culturally and linguistically appropriate targeted outreach/education encouraging CBE for age groups at higher risk administered at district/provincial level using healthcare providers in the field	• Regional awareness programs regarding breast health linked to general health and women's health programs
	Detection Methods	• Clinical history and CBE	• Diagnostic breast US +/- diagnostic mammography in women with positive CBE • Mammographic screening of target group[1]	• Mammographic screening every 2 years in women ages 50-69[1] • Consider mammographic screening every 12-18 months in women ages 40-49[1]
	Evaluation Goal	• Breast health awareness regarding value of early detection in improving breast cancer outcome	• Downsizing of symptomatic disease	• Downsizing and/or downstaging of asymptomatic disease in women in highest yield target groups

Breast Cancer Screening

➤ Breast cancer global burden

➤ Early detection and screening

➤ Adapting to existing resources

➤ Solutions and next steps

Breast Cancer Screening

- ➢ Breast cancer global burden

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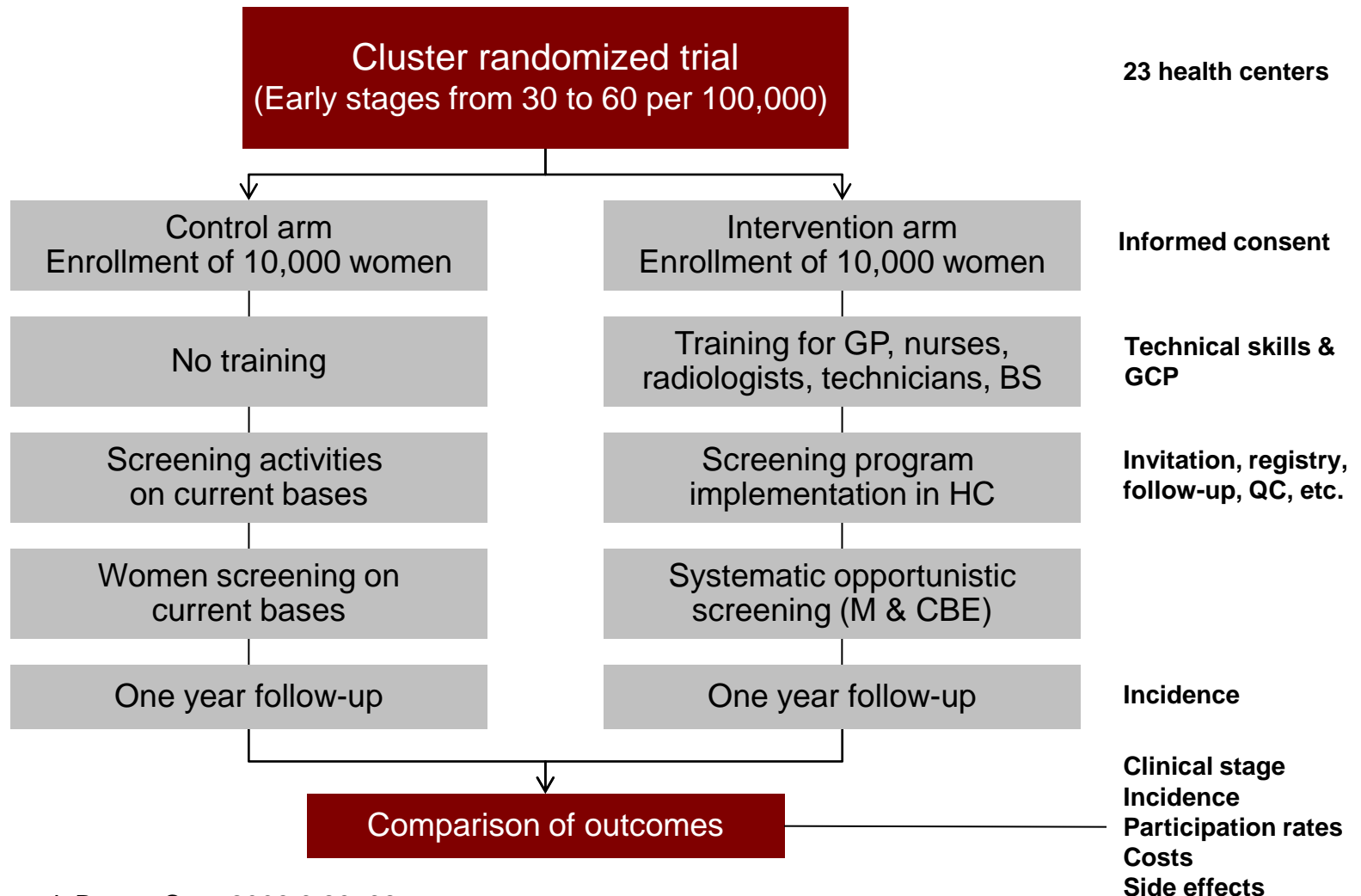# BREAST CANCER EPIDEMIOLOGY
UPPER-MIDDLE INCOME COUNTRY

Colombia

National Early Detection Program

Pilot project for the introduction of breast cancer early detection programs in Colombia

Raul Murillo, MD, MPH
National Cancer Institute
Bogota - Colombia

Study design for early detection of breast cancer in women 50 to 69

Cluster randomized trial
(Early stages from 30 to 60 per 100,000)

23 health centers

Control arm Enrollment of 10,000 women	Intervention arm Enrollment of 10,000 women	**Informed consent**
No training	Training for GP, nurses, radiologists, technicians, BS	**Technical skills & GCP**
Screening activities on current bases	Screening program implementation in HC	**Invitation, registry, follow-up, QC, etc.**
Women screening on current bases	Systematic opportunistic screening (M & CBE)	
One year follow-up	One year follow-up	**Incidence**

Comparison of outcomes

Clinical stage
Incidence
Participation rates
Costs
Side effects

Murillo R et al. Breast Care 2008;3:29–32

Final Cancer Diagnosis by Stage

Stage at diagnosis	Intervention		Control		Total
	First year	Second year	First year	Second year	
In situ	3	1			4
I	9	1	1	2	13
IIA	3		5	1	9
IIB	3		5	2	10
IIIA	1				1
IIIB	2		2		4
Total	21	2	13	5	41

Peru

Early Detection and Patient Triage

Breast cancer care model

Regional Cancer Institute
(Trujillo)

- Mammography
- Pathology
- Surgery
- Chemotherapy
- Radiotherapy

La Fora Reference Hospital

- FNA

Health Centers

- Community education
- CBE

Photos courtesy of Ben Anderson

Slide used with permission from *PATH*

Two phases

- **Phase 1:**

  – Pilot demonstration of the model of care.

- **Phase 2:**

  – National scale-up of the model.

  – Integration of post-treatment support for patients:

    - Clinical support at the local level for women who need follow-up care and monitoring.

    - Psychosocial support in the community.

Slide used with permission from *PATH
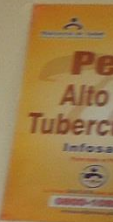
Perú Site Visit 2012

Public education about breast cancer and breast health

PLAN DE SUPERVISIÓN HOSPITAL REGIONAL DE LORETO

•Capacitación de proveedores clínicos (obstetrices y médicos) en ECM.

•El 1 y 2 de julio de 2011, un grupo de médicos y enfermeras de INEN, IREN Norte y PATH, asistió a un curso conjunto en ECM y BAAF celebrado en IREN-Norte. Donde ocho obstetrices de la Red de Salud de Pacasmayo y tres médicos del Hospital La Fora recibieron la formación en teoría científica, aplicación práctica y orientación de pacientes con respecto al ECM.

1 Hinchazón, calor, oscurecimiento o enrojecimiento de la mama.

2 Cambio en el tamaño y/o forma de la mama.
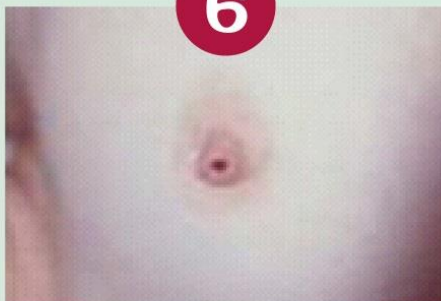
3 Hoyuelos o arrugas en la piel.

4 Picazón, úlceras o llaga escamosa en la piel o sarpullido en el pezón.

5 Hundimiento del pezón o de otras partes de la mama.

6 Secreción repentina del pezón.

7 Dolor reciente y persistente en alguna parte de la mama.

8 Aparición de alguna masa, bolita dura, o la piel más gruesa dentro de la mama.

PROGRAMA DE PREVENCION Y CONTROL DE CANCER DE MAMA
HISTORIA CLINICA DE SALUD MAMARIA

DATOS GENERALES

Nombre del establecimiento _____ N° Historia Clínica _____

Primer Apellido _____ Segundo Apellido _____ Nombres _____ DNI _____

Dirección _____ Distrito _____ Teléfono _____

___/___/___ Fecha de nacimiento   Edad (años) _____ Establecimiento que refiere _____ ___/___/___ Fecha de consulta

¿Has escuchado acerca de salud mamaria de un promotor(a) de salud?

No ☐   Si, en una sesión educativa en el establecimiento de salud ☐   Si, en una sesión educativa en mi comunidad ☐   Si, a través del contacto individual con el promotor ☐

ANAMNESIS

Motivo de consulta: Por tamizaje ☐   Por síntomas mamarios ☐   Por referencia ☐

Síntomas _____

_____

_____   D / M / A _____   Duración _____

Relación con ciclo menstrual: SI ☐   NO ☐   Peso: _____ Kg.   Talla: _____ mt.

ANTECEDENTES MAMARIOS:

Exámenes previos: Biopsia ☐   Mamografía ☐   Ecografía ☐   Fecha: ___/___/___   Resultado: _____

Mastitis ☐   Otros: _____

Edad menarquia: _____ A   Edad menopausia: _____ A   G ☐   P ☐☐☐

Uso de anticonceptivos: SI ☐   NO ☐   Tipo: Oral ☐   Inyectable ☐   Duración: _____ M / A

Terapia de reemplazo hormonal: SI ☐   NO ☐   Edad primer embarazo: ____ Años   Lactancia Materna: SI ☐   NO ☐

Antecedentes personales y familiares:

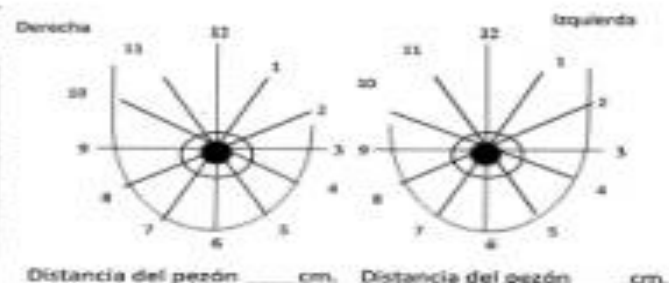Historia personal de: Cáncer de mama SI ☐ NO ☐   Cáncer de ovario: SI ☐ NO ☐   Otro cáncer: _____

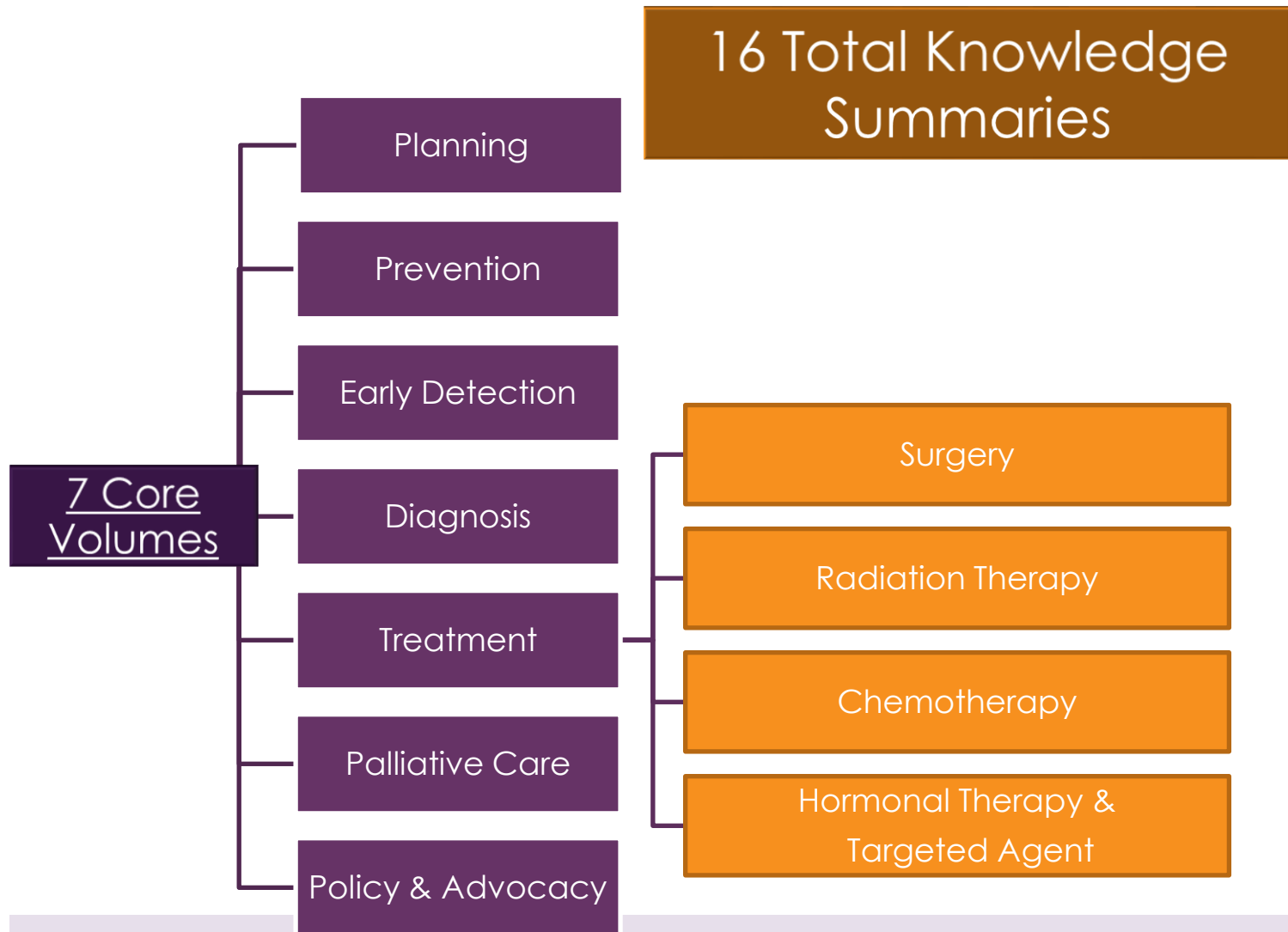Historia de familiar directo de: Cáncer de mama SI ☐ NO ☐   Cáncer de ovario: SI ☐ NO ☐   Otro cáncer: _____

Hábitos: Tabaco: SI ☐   NO ☐   Alcohol: SI ☐   NO ☐

EXAMEN CLINICO DE MAMA:

CARACTERISTICAS DEL TUMOR		Mama Derecha	Mama Izquierda
Tumor palpable	Tamaño Tumor 1	cm	cm
	Tamaño Tumor 2	cm	cm
Consistencia del tumor (blando, duro, pétreo, fluctuante)			
Forma del tumor (redondo, oval, dismórfico)			
Bordes del tumor (regular, irregular)			
Ganglio (axilar, supraclavicular)			
Secreción por pezón (color)			
Retracción (pezón, piel)			
Eczema (pezón, areola)			
Ulceración (pezón, piel)			
Eritema o edema (pezón, piel)			
"Piel de naranja"			

Derecha   Izquierda

Distancia del pezón _____ cm.   Distancia del pezón _____ cm.

Policy Maker Communication Tools

16 Total Knowledge Summaries

7 Core Volumes

- Planning
- Prevention
- Early Detection
- Diagnosis
- Treatment
  - Surgery
  - Radiation Therapy
  - Chemotherapy
  - Hormonal Therapy & Targeted Agent
- Palliative Care
- Policy & Advocacy

Policy Maker Communication Tools

www.iccp-portal.org

KEY POLICY SUMMARY:

Early detection programs

- Detecting breast cancer early in its natural history improves survival, lowers morbidity, and reduces the cost of care.
- Effective early detection programs should focus on:
  - Early diagnosis – through increased breast awareness and reducing barriers to accessing care;
  - Screening by clinical breast exam (CBE) or CBE in conjunction with mammography performed in a cost-effective, resource-sustainable and culturally-appropriate manner;
  - Timely diagnosis for all women found to have abnormal findings and prompt stage-appropriate treatment for all women proven by tissue diagnosis to have breast cancer.

Breast awareness education

- Breast awareness includes public health and professional medical education on the symptoms of breast cancer and the importance of seeking medical evaluation for breast symptoms such as lumps or thickenings that a woman appreciates in her breast.
- Awareness education can have a significant impact on reducing breast cancer morbidity and/or mortality and is an integral part of all early detection programs.
- Breast health messages should emphasize that a woman should promptly seek and receive care when she notices a breast mass, thickening or other new, persistent finding.
- Breast self-examination (BSE) contributes to a woman's sense of empowerment and awareness about her breast health, although formal training in BSE technique has not been shown to improve breast cancer early detection beyond basic breast awareness education.
- Collaboration with advocacy and community groups is crucial for the effective creation and dissemination of breast awareness messages.

Clinical breast examination

- Clinical breast exam (CBE) performed by a trained healthcare provider involves a physical examination of the breasts and underarm. CBE is a basic element of breast health care and should be offered to any woman with a breast finding that she identifies as abnormal for her.
- CBE should be incorporated into standard medical school curricula and training programs.
- Quality assurance measures should be in place to ensure that health professionals are proficient in CBE and know how women with an abnormal CBE can access diagnosis services.
- CBE can be performed by trained non-physician providers in low resource settings.

- In addition to using CBE to evaluate breast complaints, CBE can be used to screen for breast cancers as part of a breast awareness education program targeting women around age 30.
- CBE screening is a lower cost, less resource intensive screening approach than is mammographic screening and is appropriate for previously unscreened populations.
- Mammographic screening has been shown to reduce breast cancer mortality in high-resource settings (See Early Detection: Imaging Modalities module), but CBE is an acceptable screening method when mammographic screening is unavailable, unaffordable or unrealistic.
- Ultrasound imaging is not recommended as a screening modality but is important as a diagnostic tool for evaluating breast findings like masses or thickenings.

Interventions across the continuum of care according to resource level

- Breast cancer programs in low-and middle-income countries (LMICs) should follow a defined care pathway in line with available resources and capacities to allow for coordinated incremental program improvement across the continuum of care (see Table 1).

INTRODUCTION & THE CHALLENGE

Breast cancer early detection requires early diagnosis of women with breast cancer symptoms, and in addition can include more intensive breast cancer screening in which women without recognized cancer symptoms are tested for disease. Both early diagnosis efforts and early detection screening programs can contribute to data collection on breast cancer incidence and mortality in a community or region. When well collected and properly documented in hospital-based, regional or national cancer registries, these data regarding tumor size and stage at diagnosis inform breast cancer control programs about the current effectiveness of early detection efforts. Both early diagnosis and screening programs should consider the cultural context of the community served, the resources available for program support and the sustainability of such efforts over time (see Table 2).

Early diagnosis of symptomatic women relies on breast cancer awareness by patients, their community, and frontline health professionals. It requires women to have timely access to breast evaluations, follow-up diagnostic services (imaging, biopsy and pathology) and breast cancer treatment as appropriate for the stage of disease. Health systems require trained frontline personnel competent in CBE and breast health counseling to coordinate care through a referral network for timely breast cancer diagnosis and treatment. Centralized diagnosis and treatment facilities are resource-efficient if patients can reliably be triaged for care (see Early Detection: Breast Cancer Signs and Symptoms and Policy and Advocacy: Access to Breast Cancer Care modules.)

The challenge is to provide health services using sustainable resources to optimize finding breast cancers early in their course and then provide appropriate treatment that minimizes the chances of cancer spread (metastasis).

The World Health Organization (WHO) emphasizes the value of a strategy called "stage-shifting" or "down-staging", meaning the establishment of early detection programs to reduce the proportion of patients presenting with advanced ("late stage") breast cancer. When linked to effective treatment, stage-shifting improves breast cancer survival rates. Although the gold standard for early detection programs in high-income settings is mammographic screening, clinical breast exams (CBE) in lower income settings have been used successfully and are a necessary tool in any breast health system for frontline evaluation of patients with breast symptoms. Early detection screening programs can be opportunistic, i.e., initiated during routine patient visits or organized, i.e., initiated by invitation sent to a targeted at-risk patient population (see Table 3).

POLICY IMPACT
PREPLANNING

Establish goals

- The goal of breast cancer early detection is to diagnose cancer at earlier tumor stages, which allows for simpler and more cost-effective treatment to reduce both morbidity and mortality.
- Breast awareness education and clinical breast exams (CBEs) should be a standard part of breast cancer awareness efforts.
- When women find lumps or thickenings in the breast, they need access to facilities where they can undergo a diagnostic work-up to determine if it is a benign or malignant process.

Establish priorities

- Early detection programs should include an early diagnosis component (e.g., programs to increase awareness, reduce access barriers to diagnostic and treatment facilities), and a screening component (i.e., CBE or mammography; opportunistic or organized).
- Programs should be designed to be culturally sensitive and appropriate.

Establish a resource-stratified pathway approach

- Early detection programs can be developed in low resource settings and be incrementally improved as more resources are allocated to the program using a resource-stratified pathway (see Table 1).

The Breast Health Global Initiative

BREAST CANCER SCREENING
SUMMARY

- Down-staging is a key goal for improving breast cancer outcomes, but must be linked to effective treatment.

- Screening mammography reduces breast cancer mortality and is a preferred tool in high income countries.

- Clinical breast examination is a necessary tool for early detection where mammography is not available and/or not affordable in much of the country.

- Program implementation requires a broader perspective on access, provider education and patient awareness.

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The Breast Health Global Initiative

www.bhgi.info