Global Breast Cancer Conference 2009
with the 7th Biennial Meeting of the Asian Breast Cancer Society

Delivery of Breast Cancer Care in Asia

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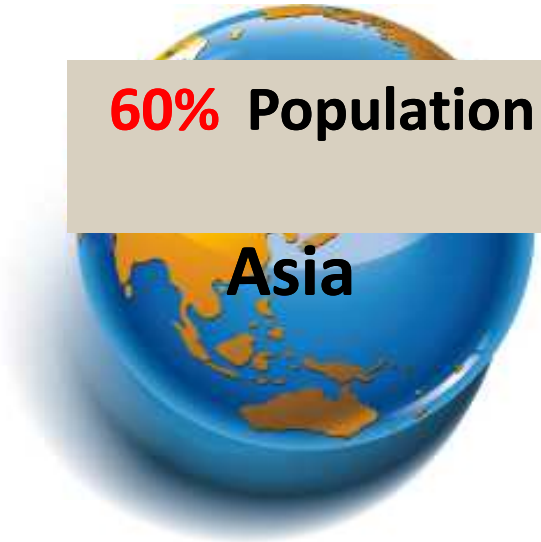
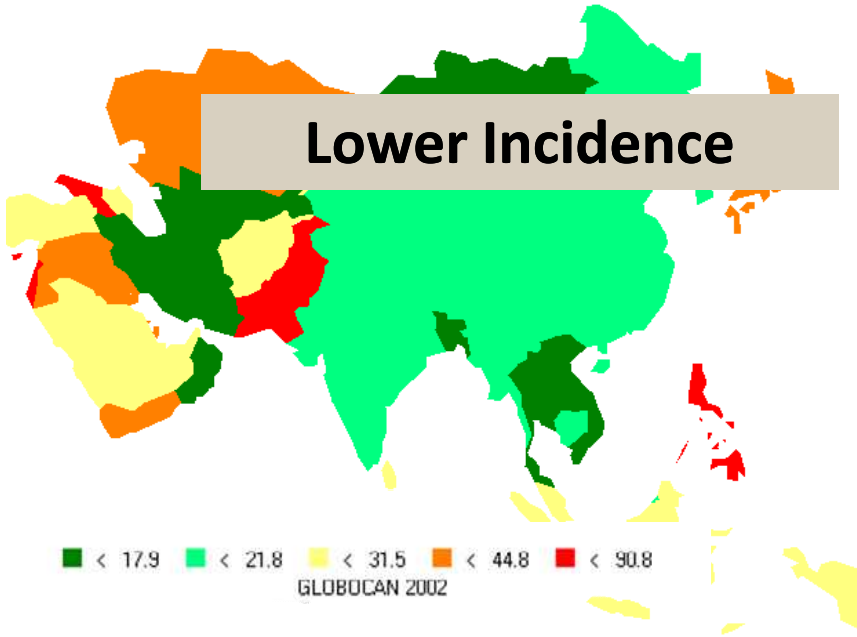
Breast Cancer in Asia

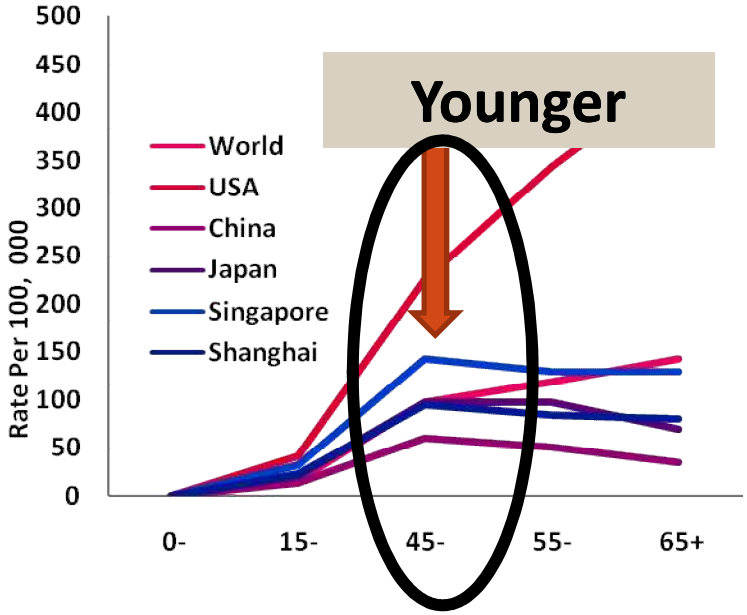


60% Population

Asia

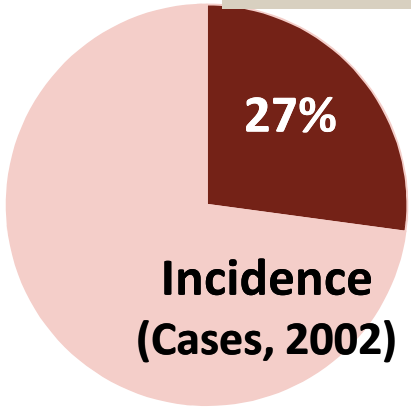


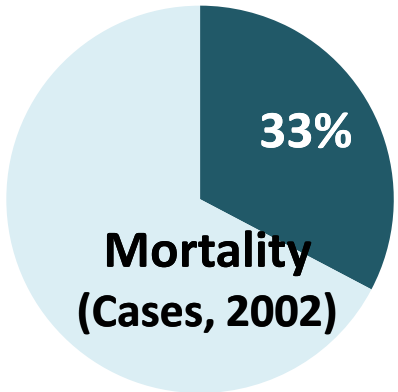
Lower Incidence



Younger

Higher Mortality



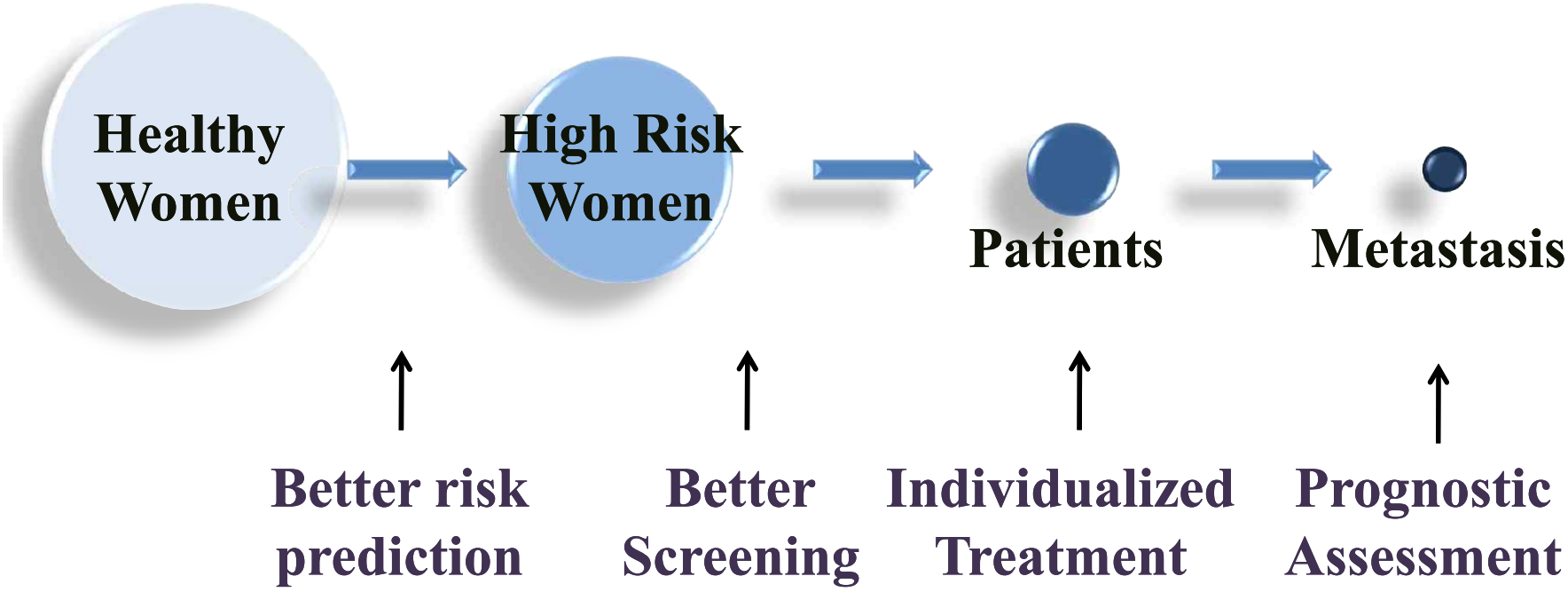


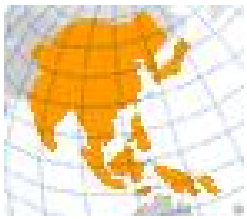
GLOBOCAN 2002, IARC

Delivering Breast Cancer Care

--According to Features in Asia Women

Breast Cancer Care





Unique Features in Asia

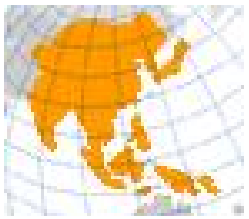
Breast Cancer Care

Better risk prediction

Better Screening

Individualized Treatment

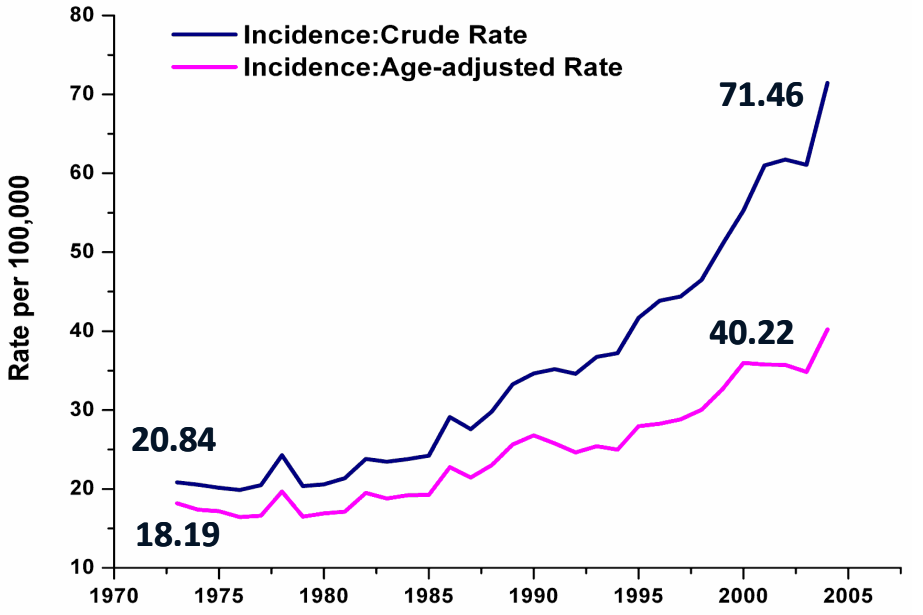
Prognostic Assessment



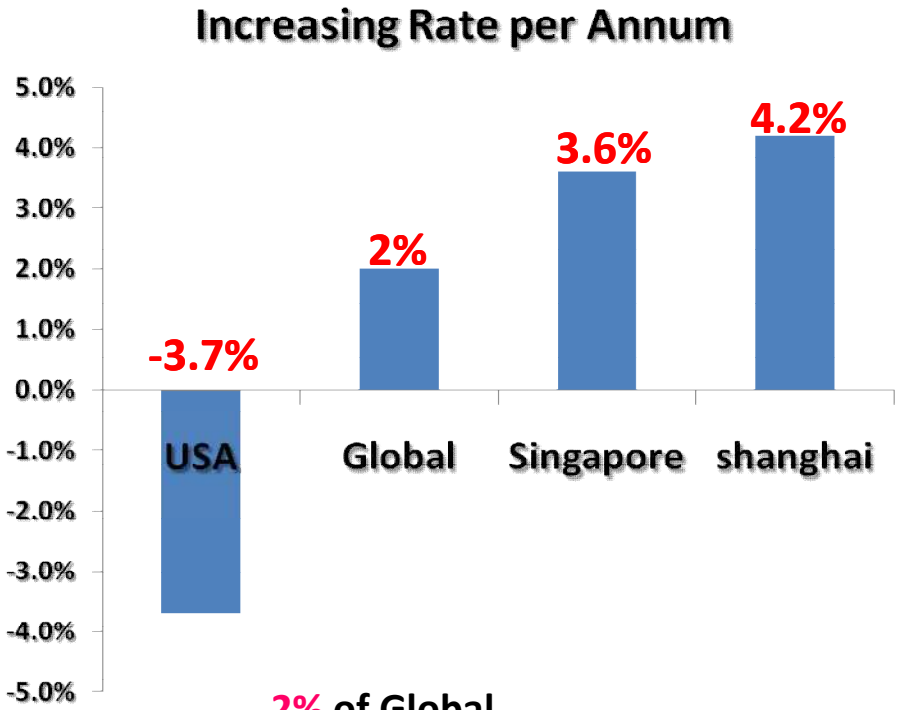
Unique Features in Asia

Unique Features-

Relative Lower but Rapidly Increasing



Incidence by Year in Shanghai, 1973-2004

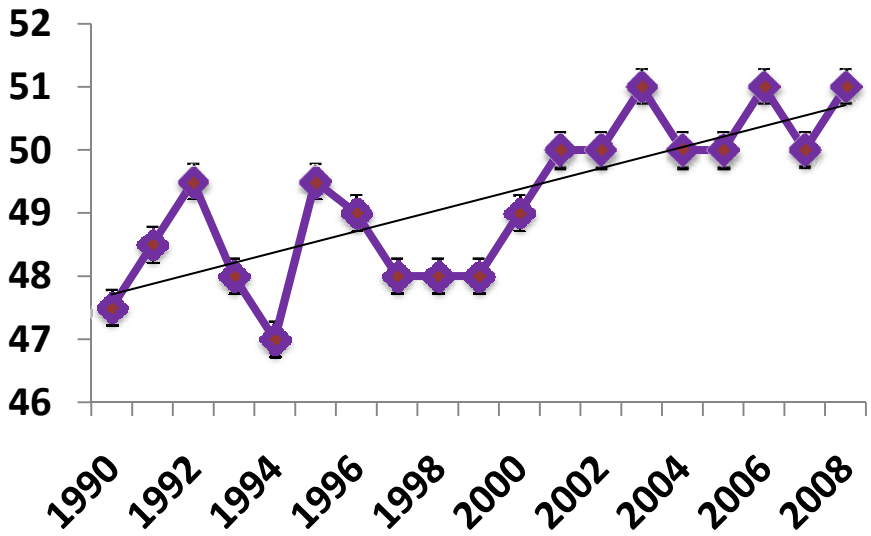


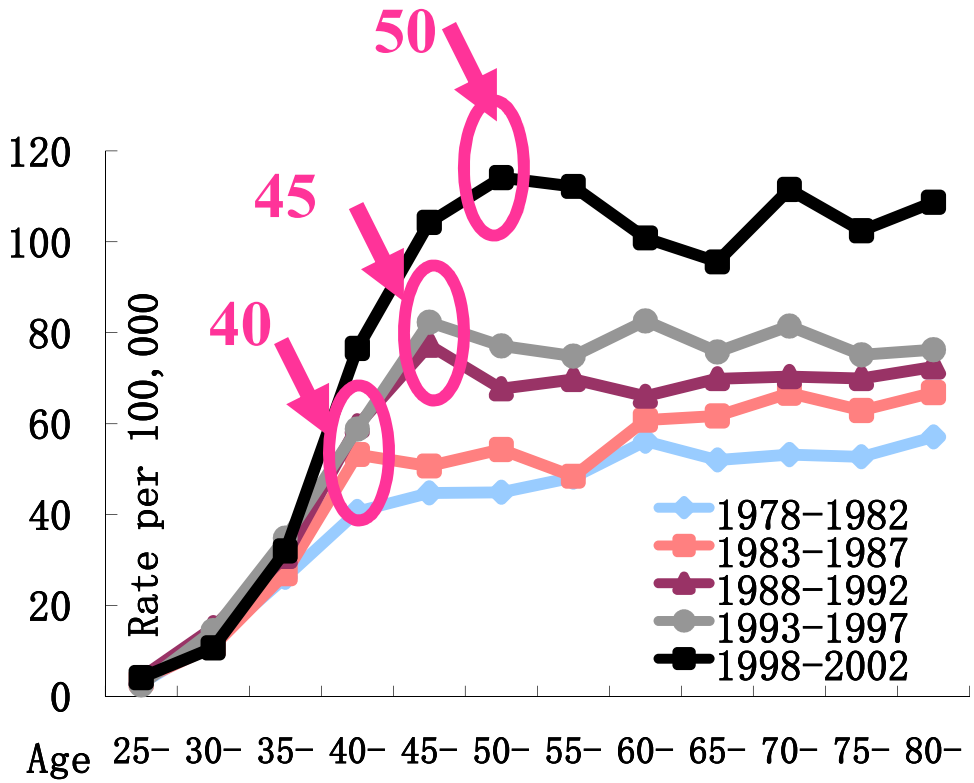
**Breast Cancer Facts& Figures 2007-2008*
***Fan L et al. Breast Cancer Res Treat. 2009 Jan*
****Seow A, et al. (1996). Int J Epidemiol 25 , 40 – 5*

2% of Global
3.6% in Singapore (25 yrs***)
4.2% in Shanghai (18 yrs**)
Decrease 3.7% in US (01-04*)

Unique Features-

Relatively Younger but Aging





Median age at diagnosis

- 50 yrs (Shanghai)
- 61 yrs (U.S.)

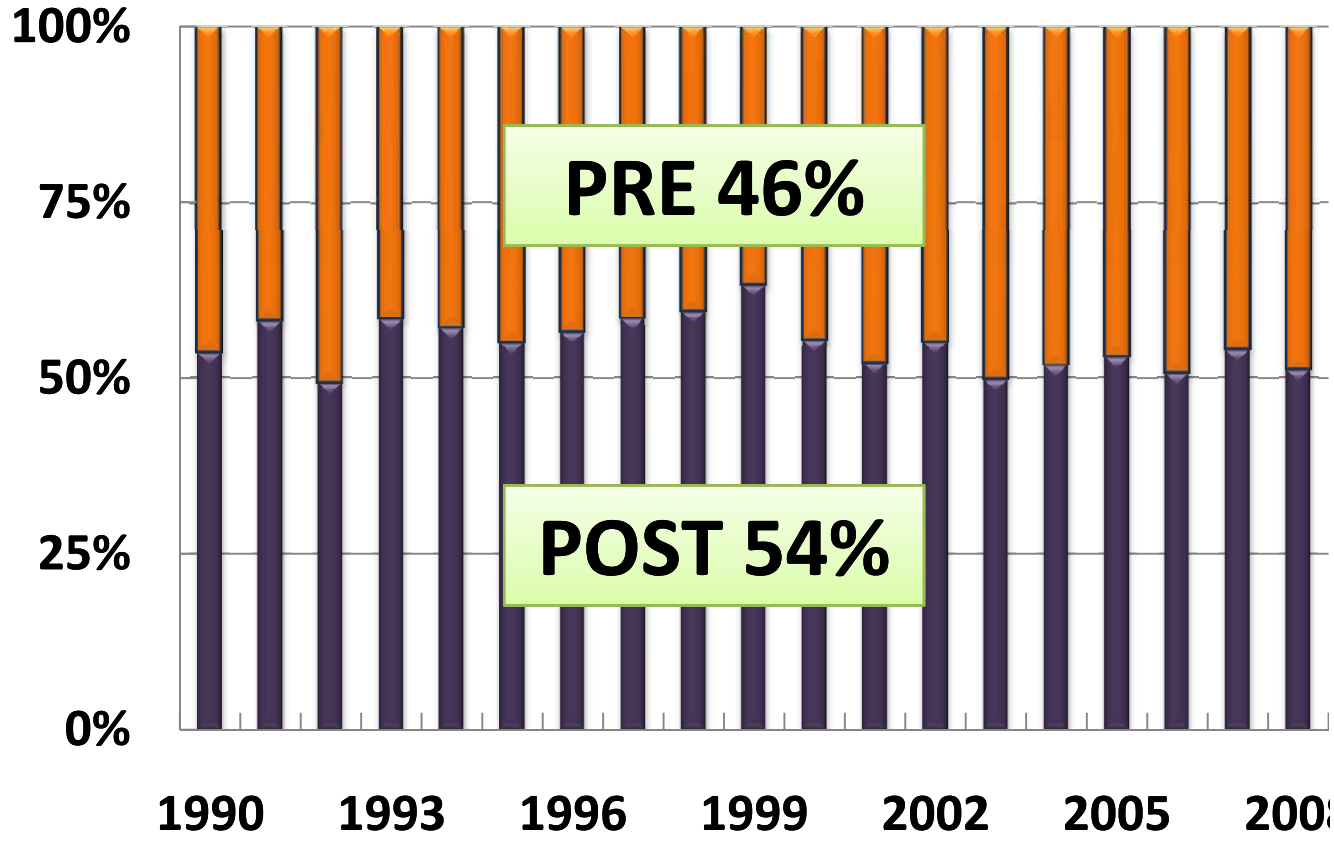
Do not ignore the old

Data from Cancer Hospital, Fudan University

Unique Features-

Relative Higher Proportion of Premeno. Pts

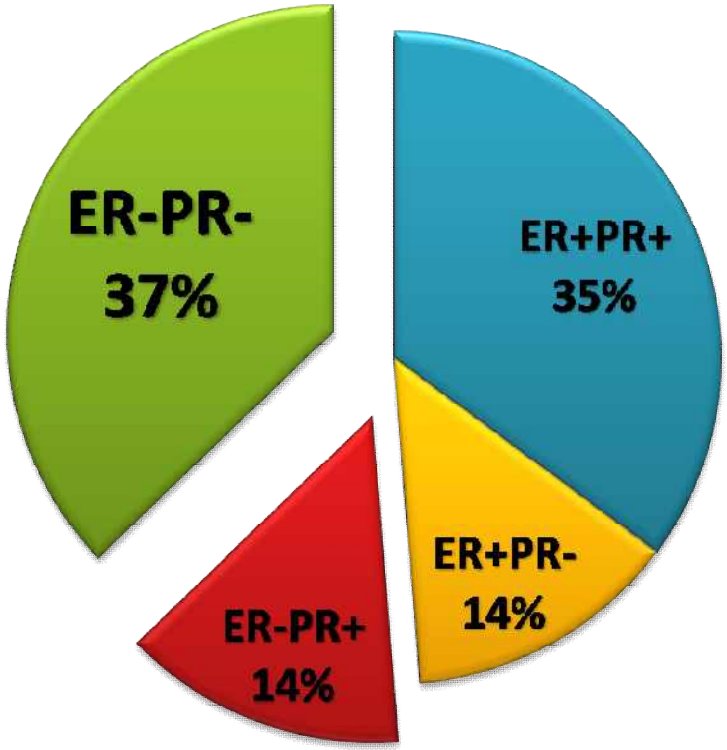
- **Total: 10170 cases, 1990-2008**



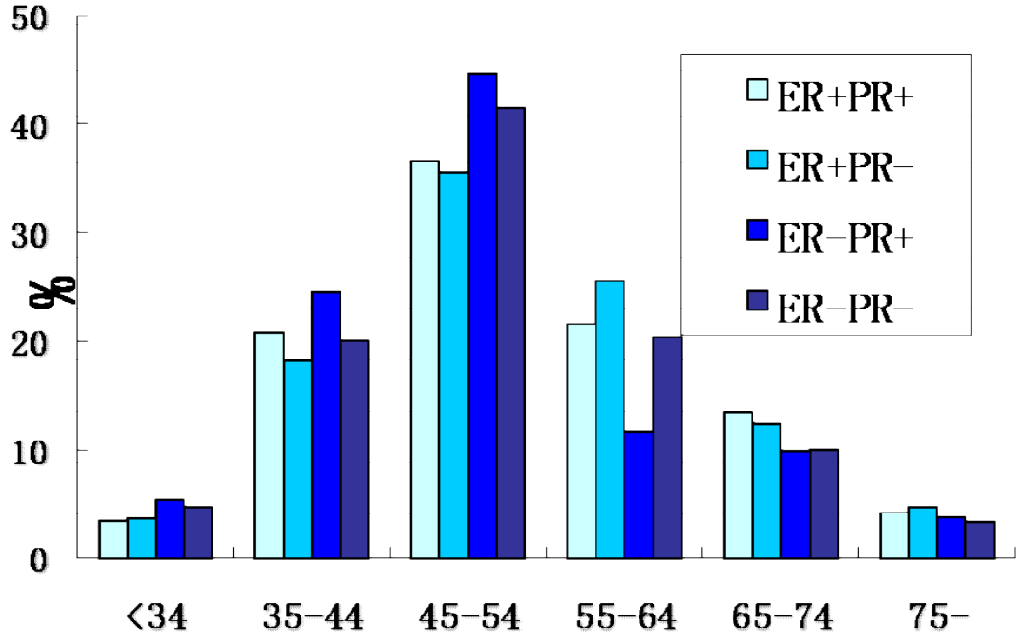
Data from Cancer Hospital, Fudan University

Unique Features-

Hormone Receptor Status



More HR Negative Patients



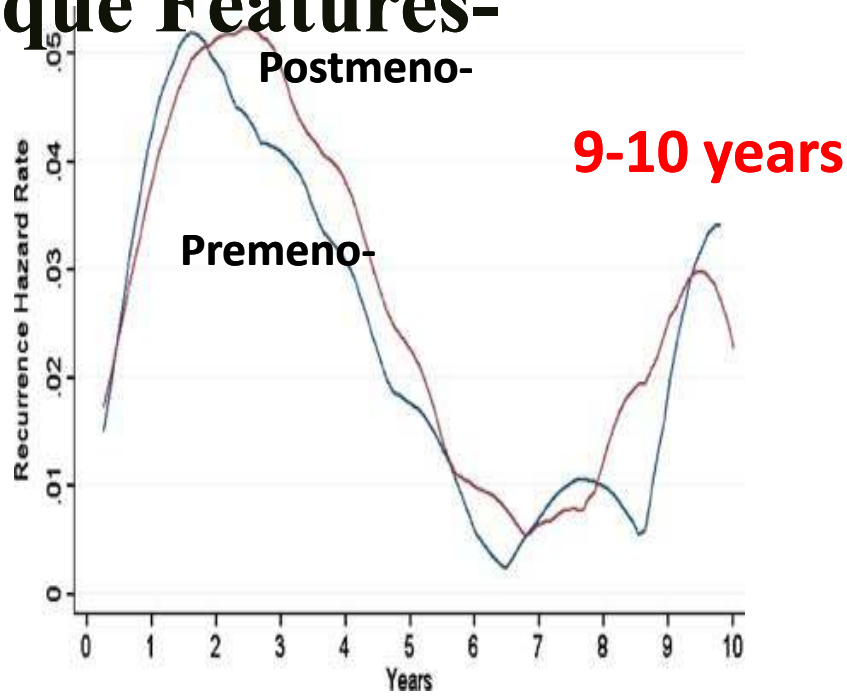
HR Negative Popular in The Young

N= 6427 (1990-2008) **Data from Cancer Hospital, Fudan University**

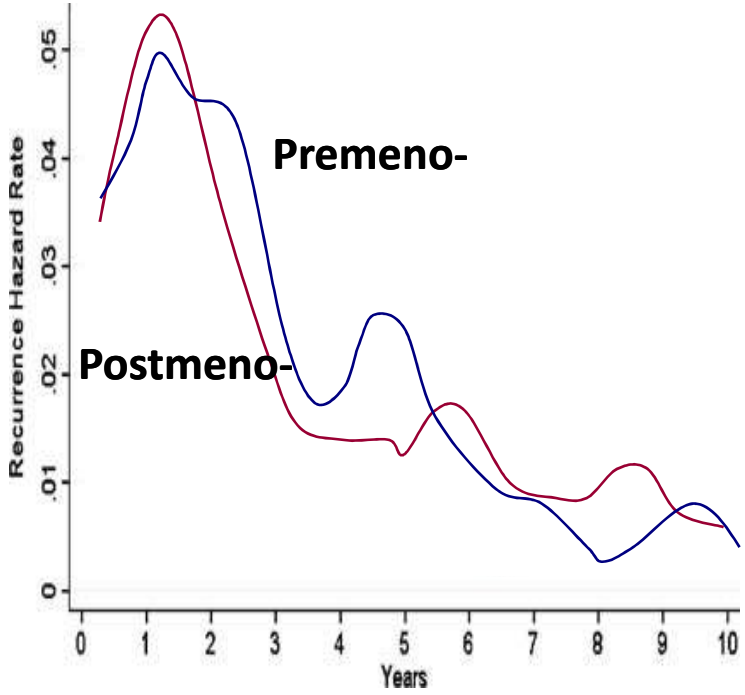
Unique Features-

Double Curves of Recurrence Pattern

Unique Features-



Overlapped, Double peaks



Overlapped, Single peak

Data from Cancer Hospital, Fudan University

Demicheli R, et al. PMID: 8271282

Unique Features-

Factors Influence Breast Cancer Incidence

Initiative and Promotive

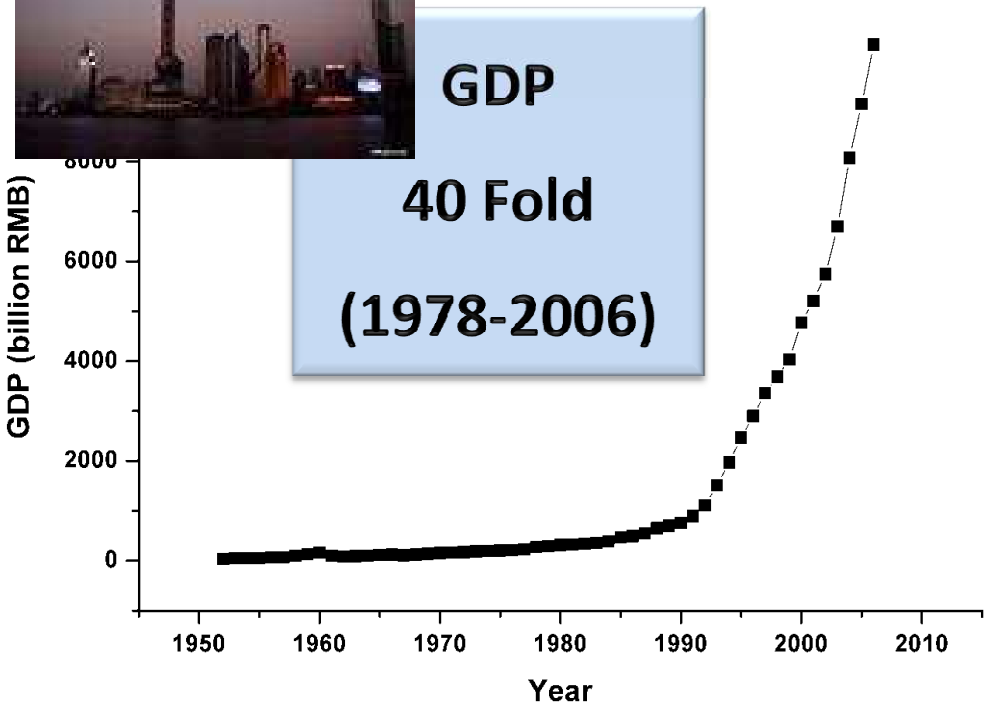
- Demographic Factors
- **Reproductive History**
- **Dietary and Life Style**
- Endocrine Factors

Detective Factors

- Amount of Screening
- Sensitivity of Screening

Unique Features-

Rapid Development of Economy& Westernization



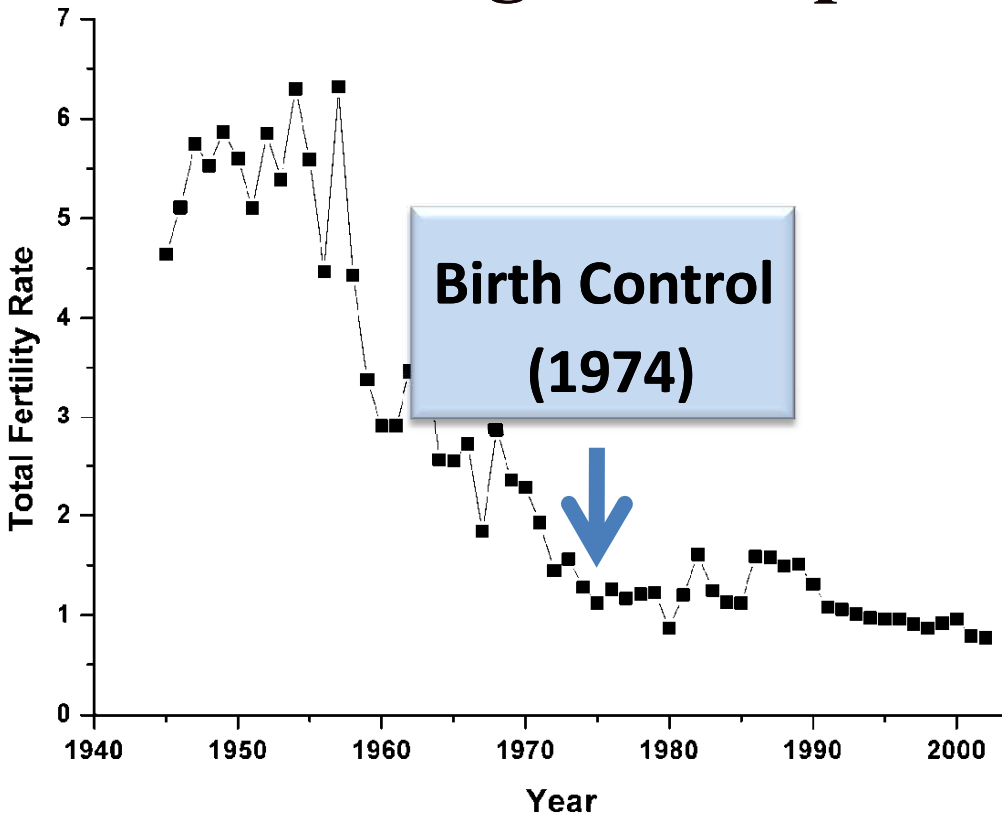
Less healthy diet options

Westernized Lifestyle

Obesity

Unique Features-

Changes in Reproductive Patterns



Total Fertility Rate in last 30 years

Reduction in birth rate

Reduction in early fertility

Less breast-feeding

Population and Family Planning Commission of Shanghai

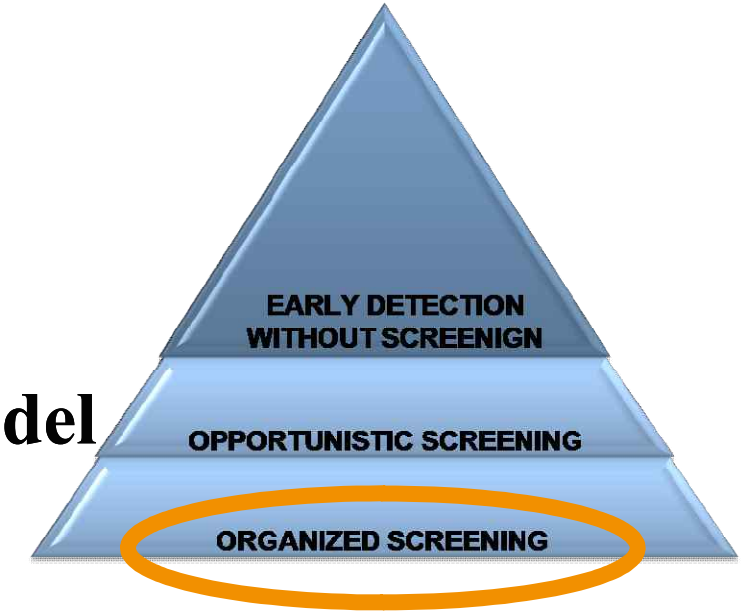
Unique Features-

Current Status of Screening in Asia

Low coverage

Imbalance

No powerful risk assessment model



Risk Assessment

- Gail
- Couch
- BRCAPRO
- Claus
- ……

Oriental

Early Detection Modality in China

- Most: Without Screening

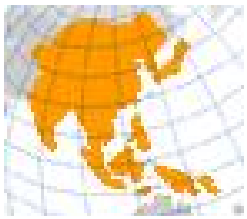
Breast Cancer Care

Better risk prediction

Better Screening

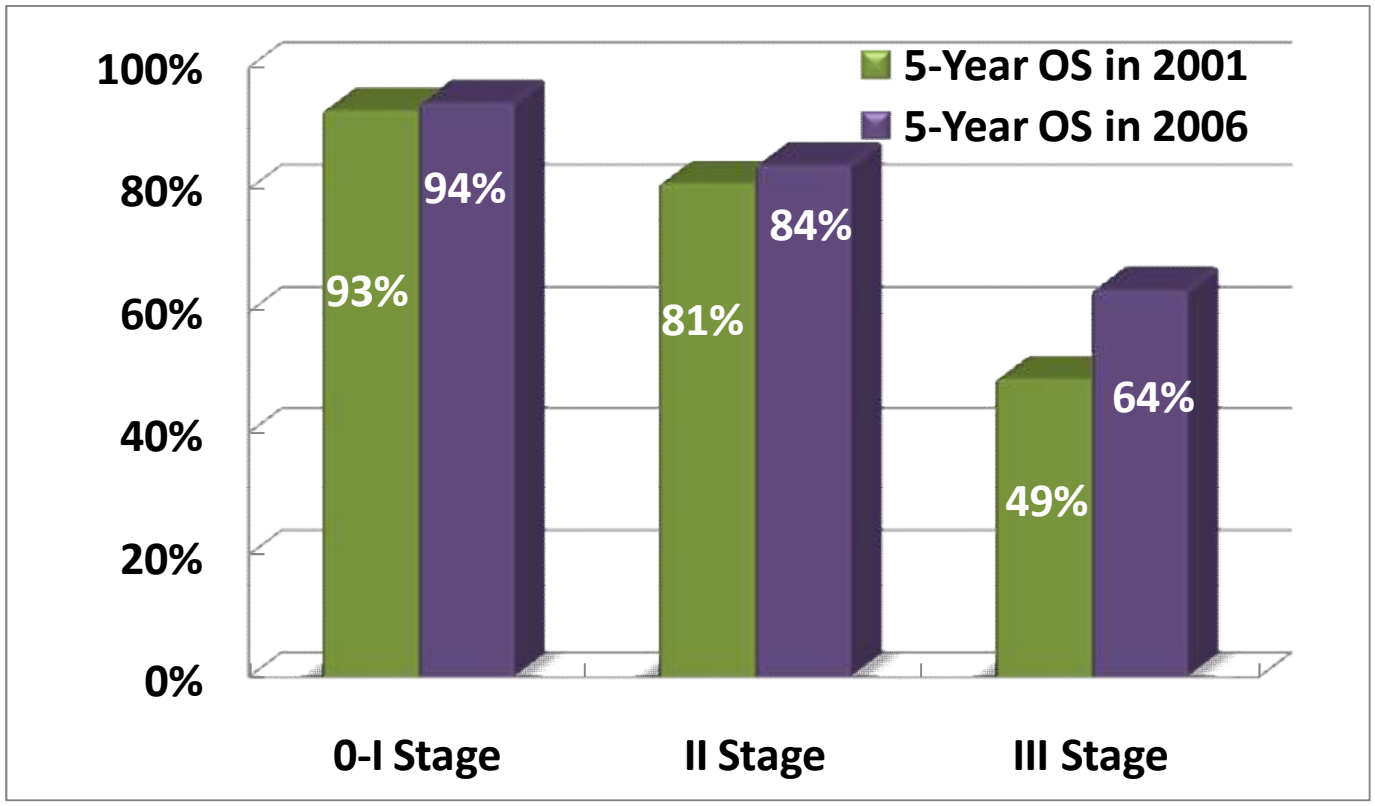
Individualized Treatment

Prognostic Assessment



Unique Features in Asia

Benefit from Early Diagnosis



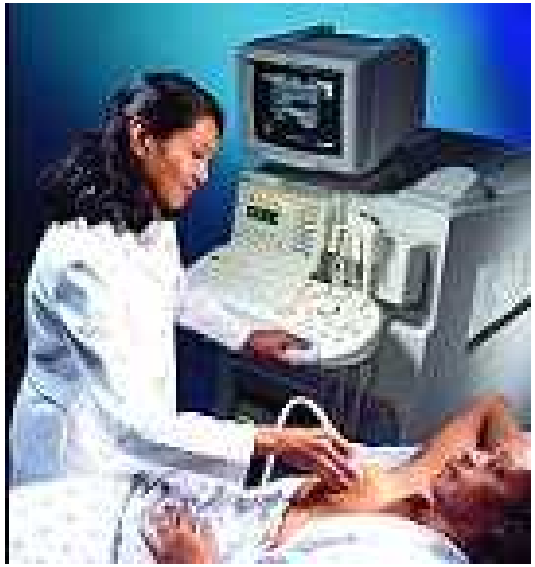
Early Detection → **Favorable Survival**

Data from Cancer Hospital, Fudan University

Breast Imagings with Established Diagnostic Value

Mammography

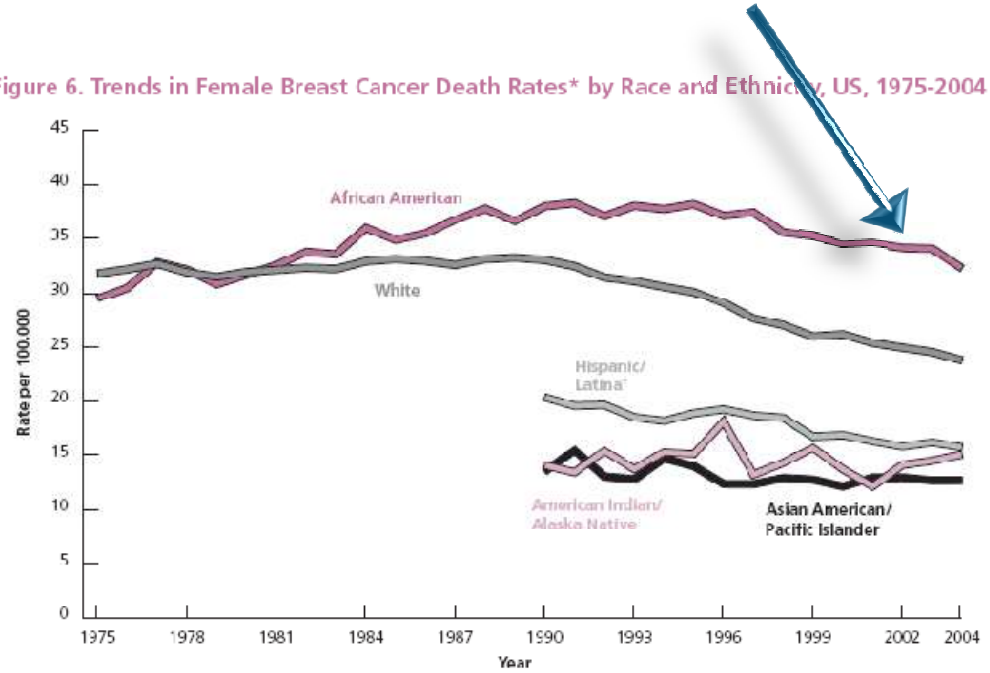
Ultrasonography



MRI

Mammography in Screening

- **Most effective** method for screening
- **20-40%** mortality reduction
- **Recommendation**
  - For >40yr
  - Average risk
  - Annually



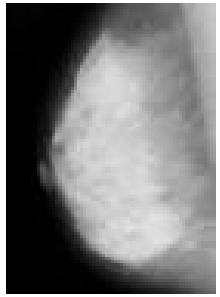
Ultrasonography in Screening

- **Oppose**
  - **Can not detect *microcalcification***
  - **Machine/Operator dependent**

- **Approve**
  - **High sensitivity in Dense Breast**
  - **Biopsy guidance**
  - **Economical & Tolerated**
  - **Assess implant**

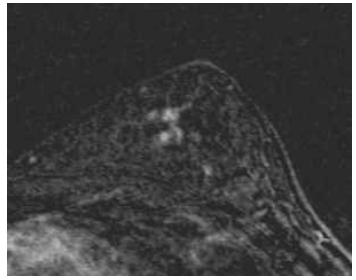
MRI in Screening

- More sensitive
  - Dense breast
  - 40% DCIS are seen only with MR

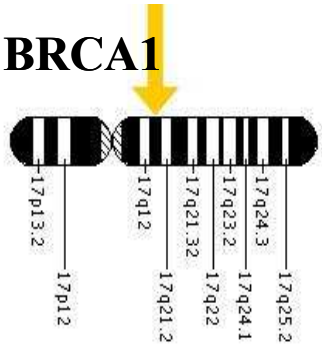


Dense Breast

- Screening in High-risk Populations*
  - Genetic mutation
  - Risk >20%
  - Chest irradiation history

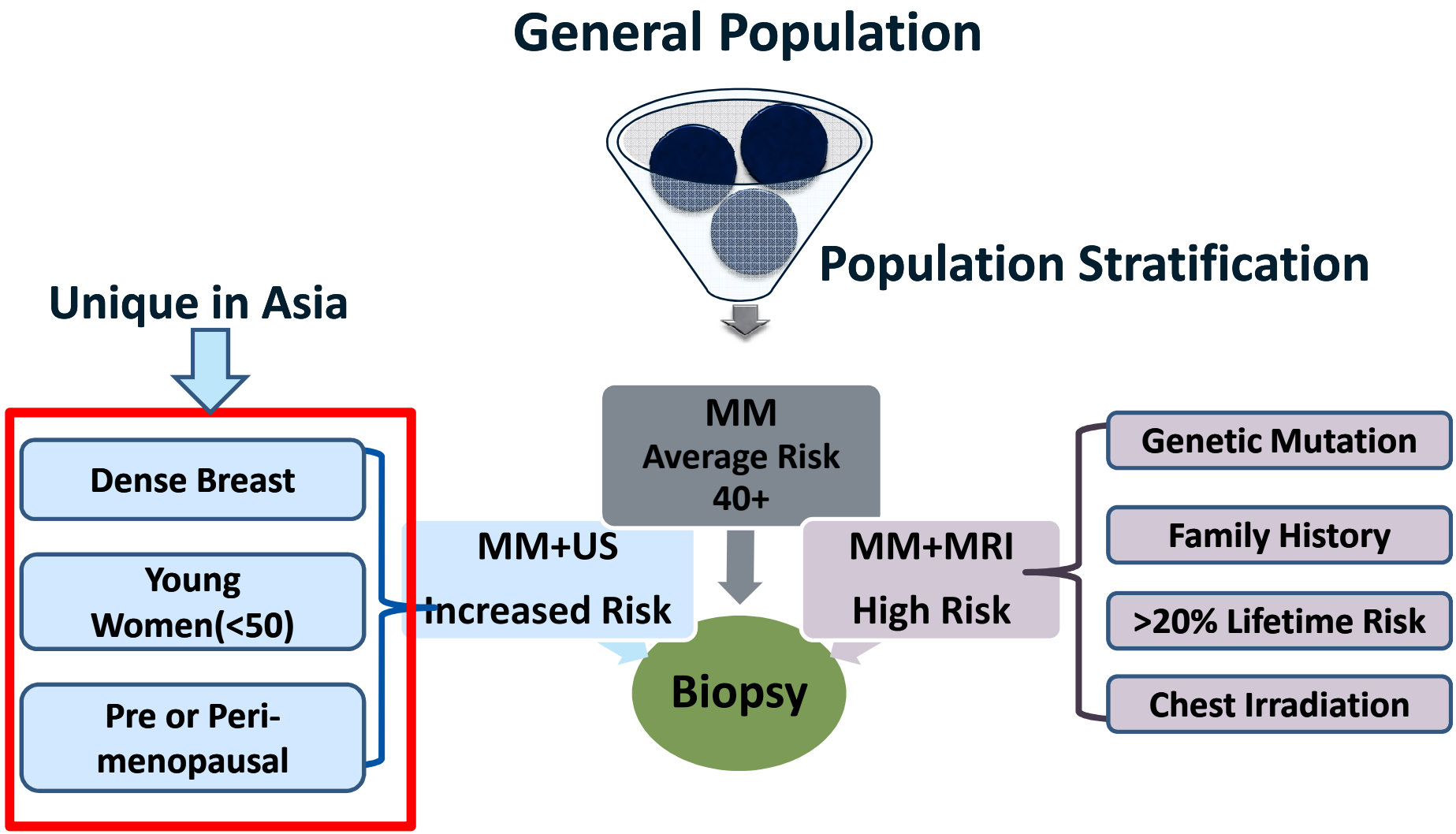


DCIS



* Saslow D et al. CA Cancer J Clin. 2007;57:75Y89.

Personalized Screening



Our Experience

-Fudan Breast Screening Project

Outpatient Screening

（1997-2000）

Employer Based Projects

（ 2005-2010）

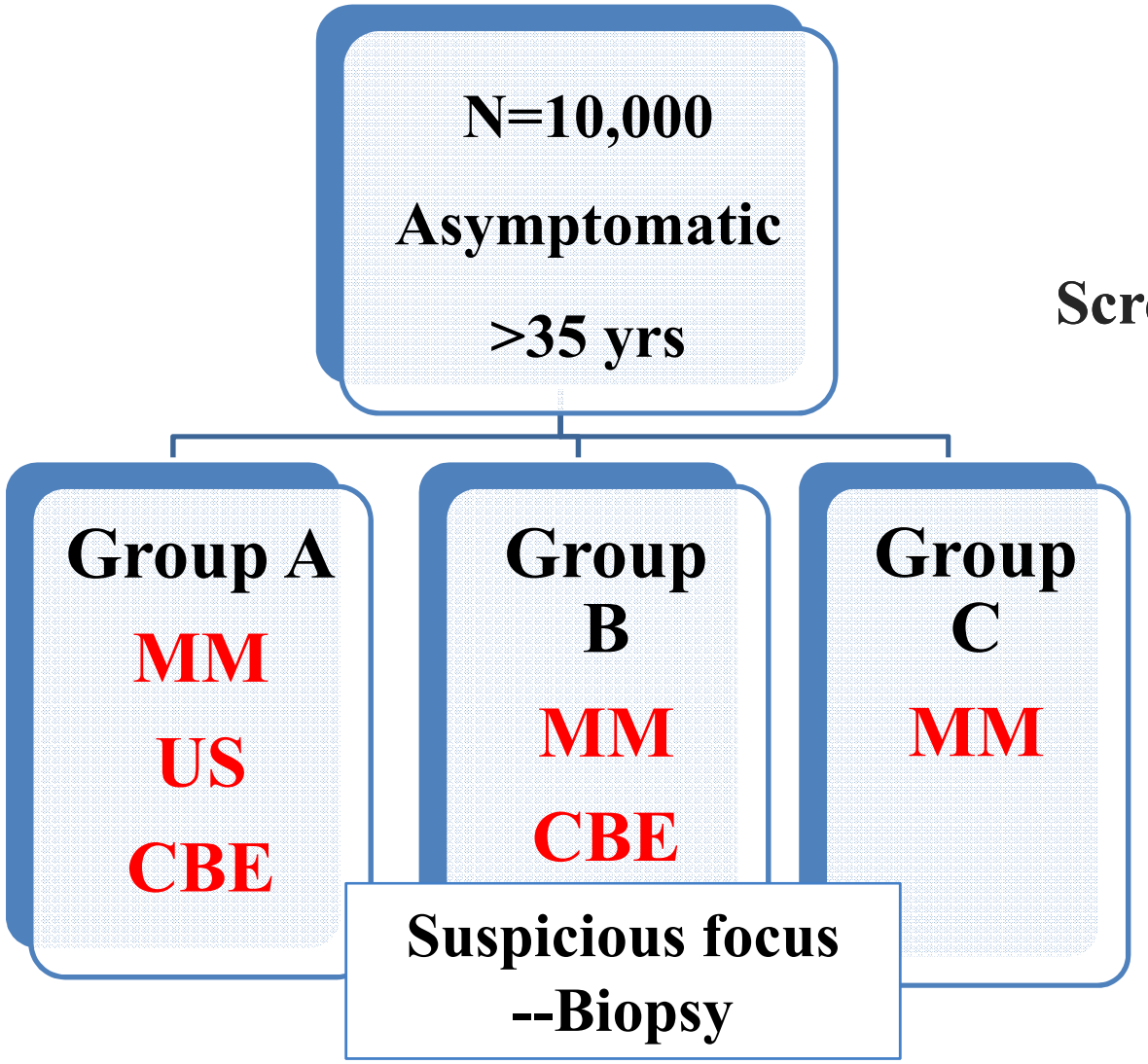
Community Based Projects

（ 2008-2013）

Tailoring Screening for Target Population

Screening Project		Target population
Outpatient Screening	1997-2000	>40 years （Standard of the White ）
Employer Based Projects	2005-2010	35 yrs-retire (55-60 yrs) （ High Incidence Age Group）
Community Based Projects	2008-2013	35-75 yrs (high risk: 45-70 yrs) （ Two Peak, Aging, Cohort Effect）

Employer Based Project

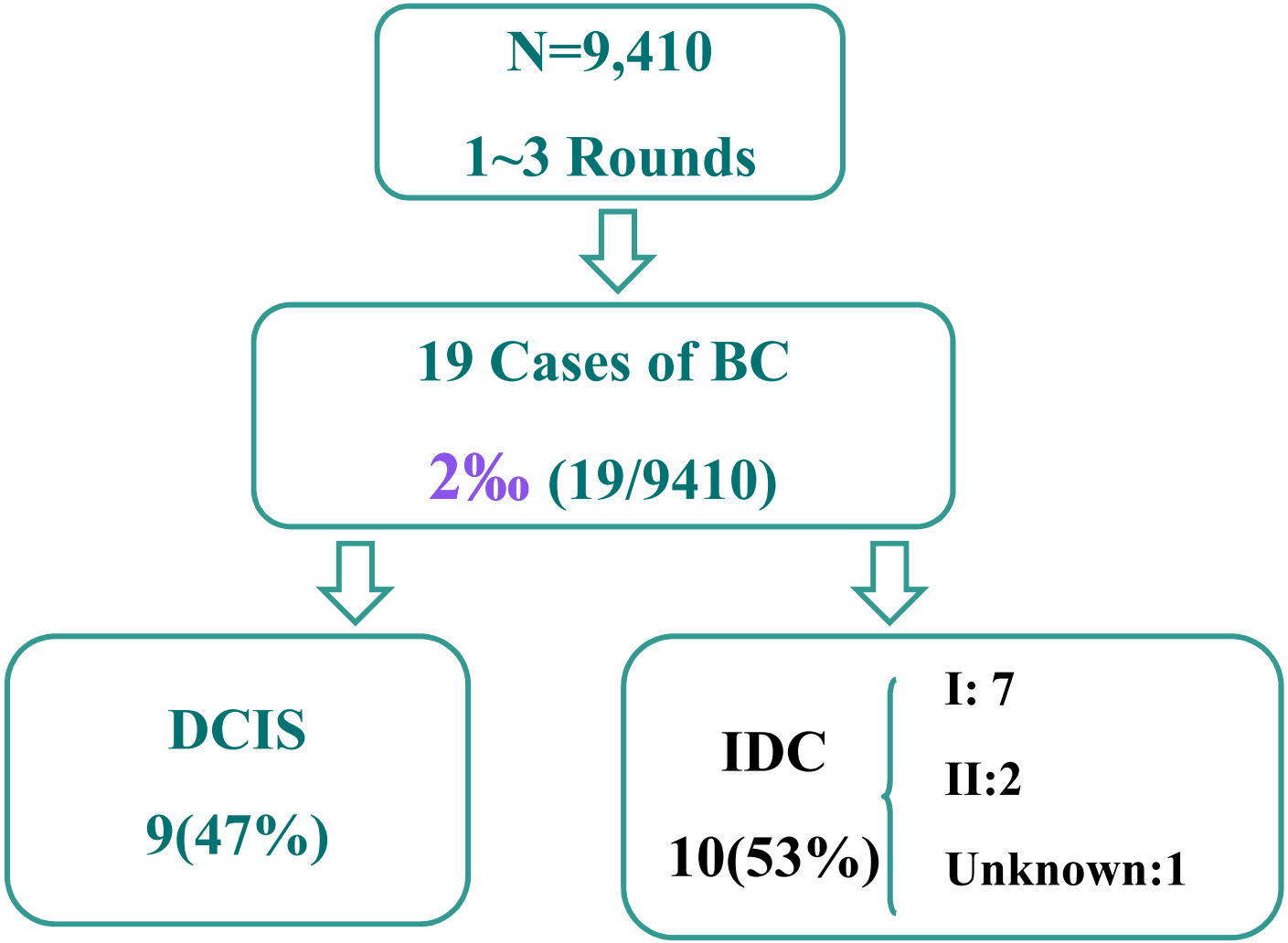


Screening Interval

1-1.5 years

Result of Employer Based Project

(Updated to 2009)



Result of Employer Based Project

19/9410 Cases of Breast Cancer

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mammo	O	X	X	O	O	O	O	X	O	O	O	O	O	X	X	X	O	O	O
US	O	O	O	X	O	X	X	?	X	X	X	O	O	O	O	O	O	X	X
CBE	X	O	O	X	X	X	X	X	X	X	X	X	X	X	O	O	X	O	X
Size (mm)	15	15	12	14	10	10	01	?	03	07	15	15	08	20	15	18	10	10	?
Stage	I	I	I	II	I	0	0	?	0	0	I	0	0	II	0	I	0	I	0

41~58 yrs, median 51 yrs

Comparison of Different Methods

	Recall %	Biopsy Rate %	Yield per 1000
MM+US+CBE	4.90	1.60	1.9
MM+CBE	6.90	1.04	1.7
MM	4.48	0.63	1.5
P value	NS	0.043	NS

CEB and US didn't increase the yield in average population

Community-based Projects

In a Communities

- 80, 000 persons

Target Population

- 35-75 yrs old, 15,000 women
- Asymptomatic

Methods

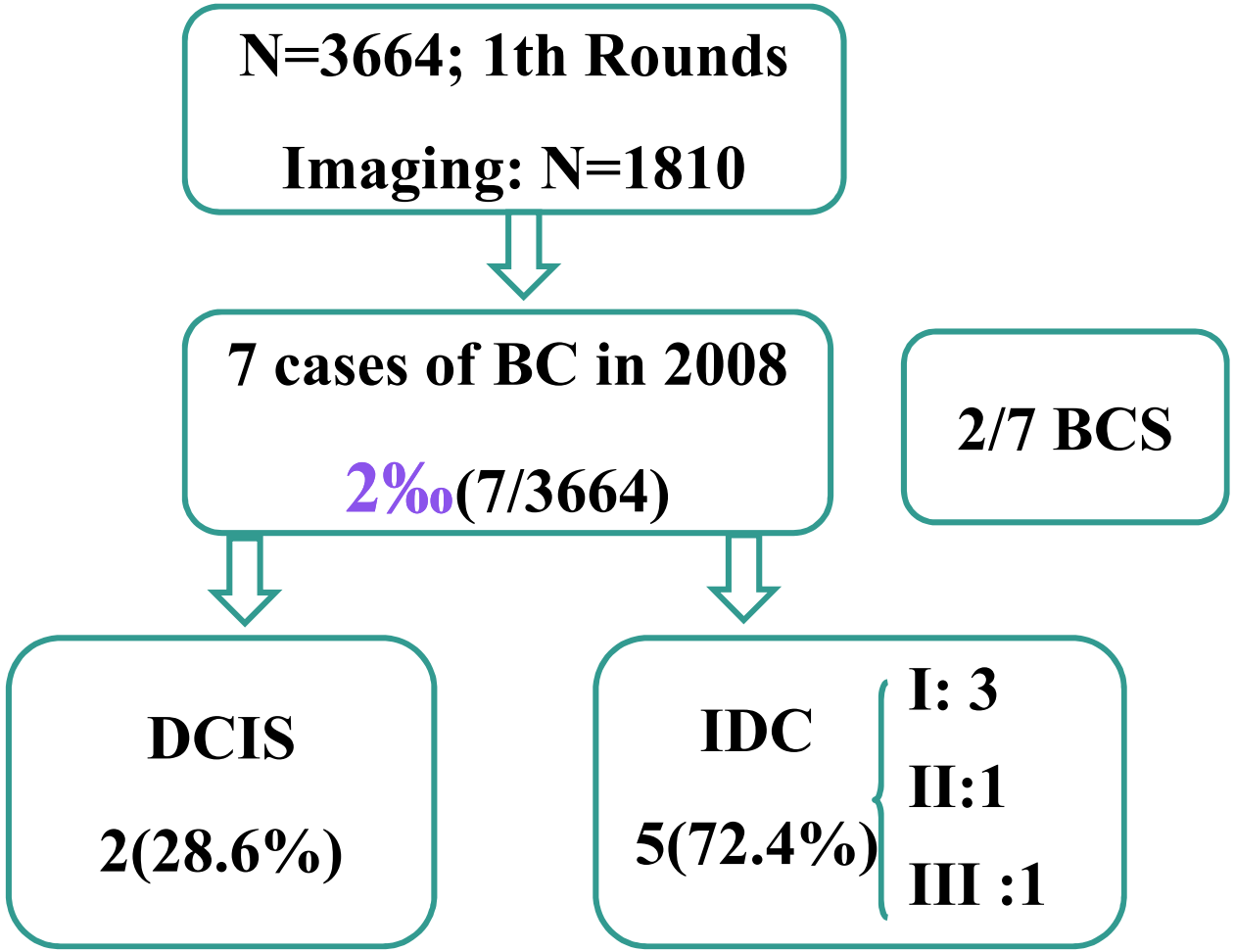
- Questionnaire
- Free MM (high risk), N=8,000
- High risk: 45-70 yrs, family history, atypia

Interval of MM

- 1.5 years

Result of Community-based Project

(Updated to 2009)



7 cases of BC in Community Based Projects

	GJZ	MYP	MXM	XJM	GHZ	GLP		Yield
Age	66	60	50	54	56	46	49	‰
Mammo	O	X	O	O	O	O	O	1.6
US	O	O	X	X	X	X	O	0.82
MM+US	O	O	O	O	O	O	O	1.9
CBE	X	X	X	X	X	X	O	0.27
operation	?	X	O	O	X	X	X	
Size	?	1.0	0.5	0.8	1.0	1.0	4.8	
LN	?	0	0	0	0	0	0	
stage	III(?)	I	I	0	I	0	IIa	

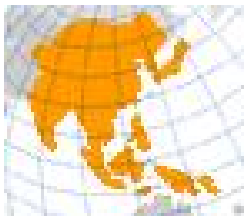
Breast Cancer Care

Better risk prediction

Better Screening

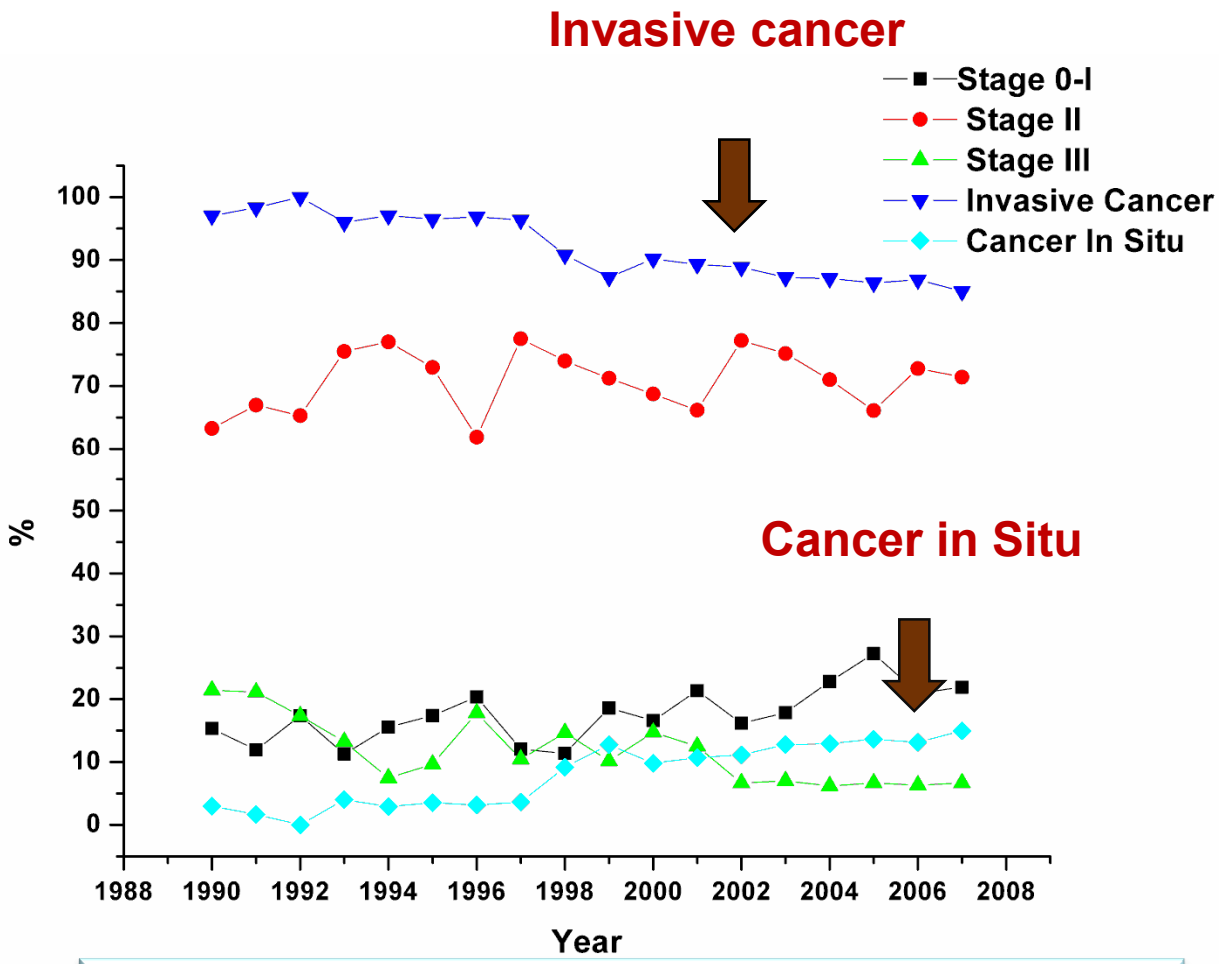
Individualized Treatment

Prognostic Assessment



Unique Features in Asia

More Favorable Stage Distribution

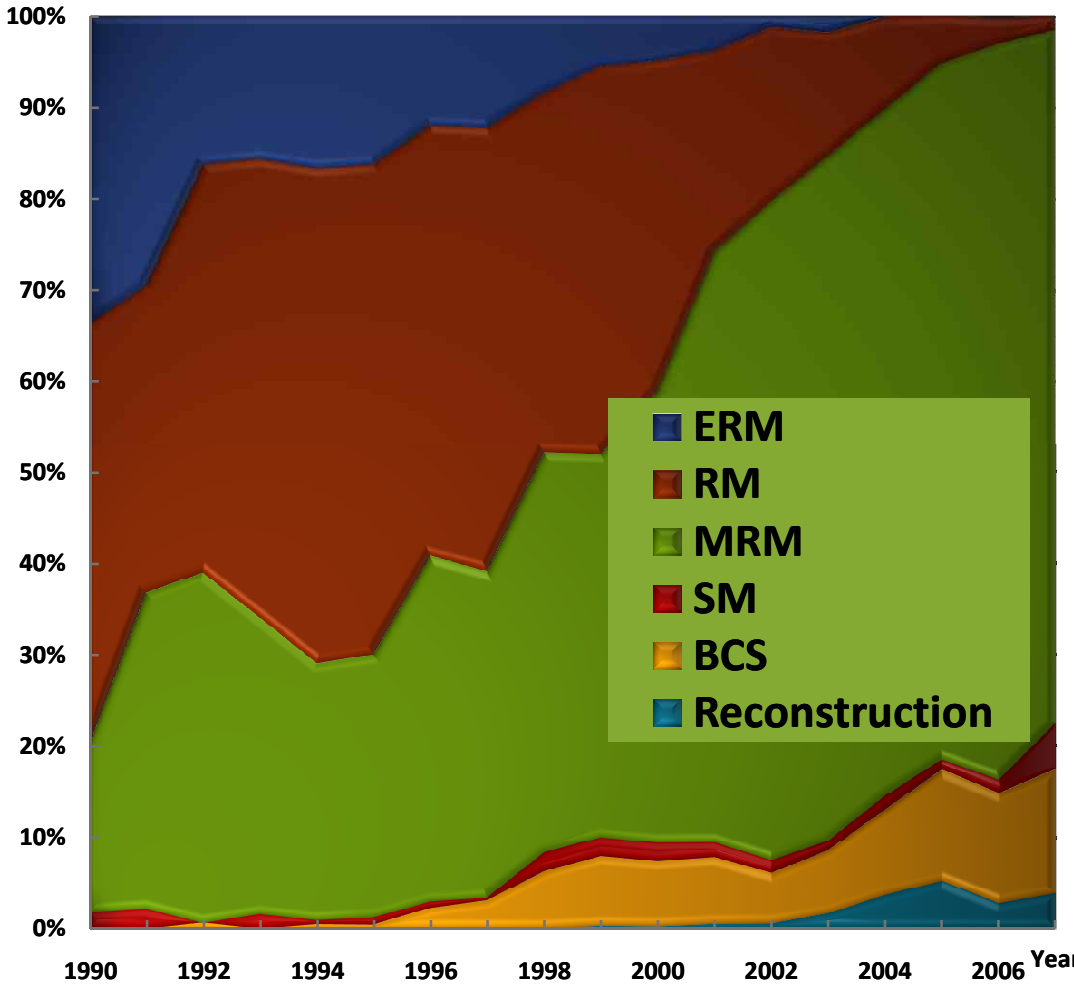


- Stage 0–II
  - 1990 78.6%
  - 2008 87.9 %
- CIS
  - 1990 3.0%
  - 2008 14.9%

Less Invasive Treatment Options

Data from Cancer Hospital, Fudan University

Surgical Treatment: Changing Modalities



ERM & RM: Seldom Use

MRM: Most popular

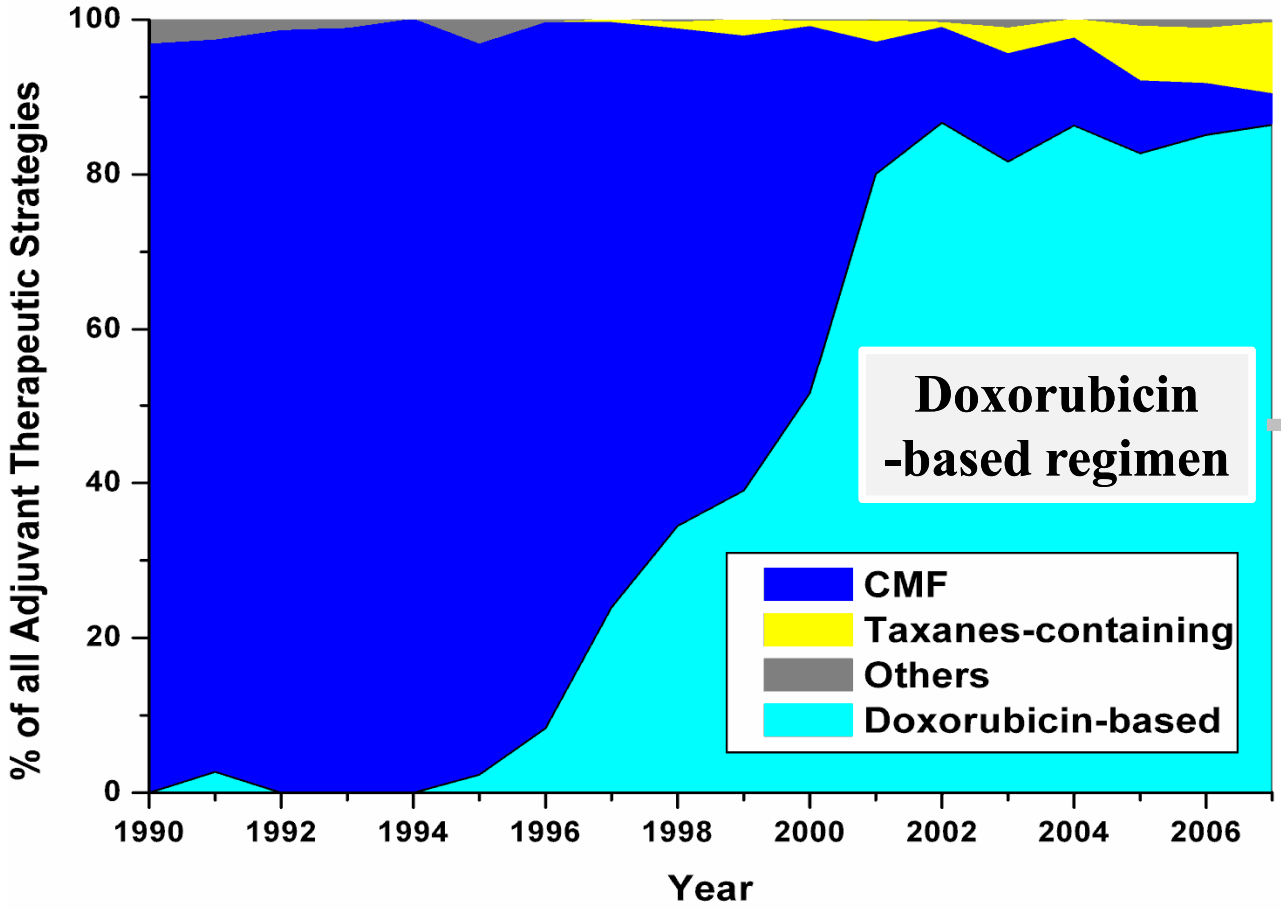
SM: Stable Proportion

BCS & Recon : prevalent since mid-1990s

Trends of Surgical Modalities to Breast Cancer. 1990-2008*

Data from Cancer Hospital, Fudan University

Adjuvant Chemotherapy: Changing Modalities



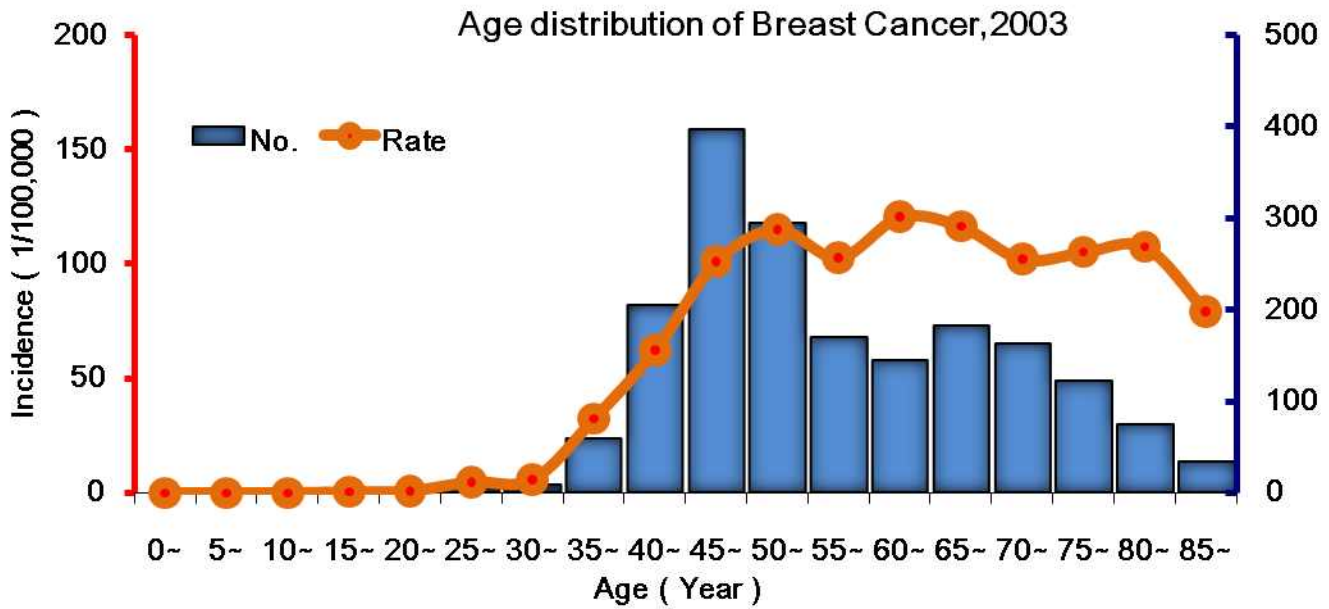
Trends of Adjuvant Therapeutic Strategies, 1990-2007

Data from Cancer Hospital, Fudan University

Adjuvant Endocrine therapy

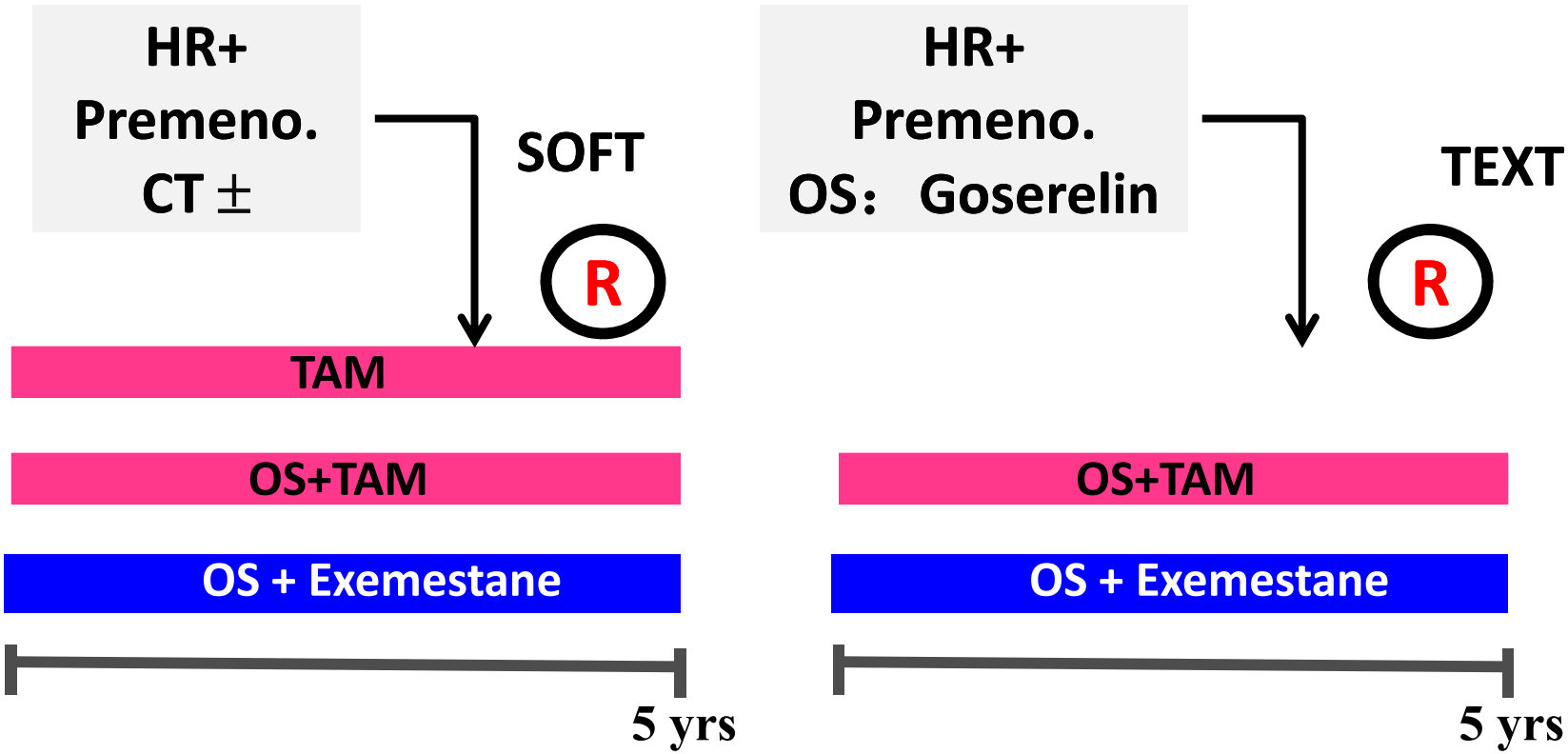
Challenge

- **Younger onset age**
- **More Premeno.**



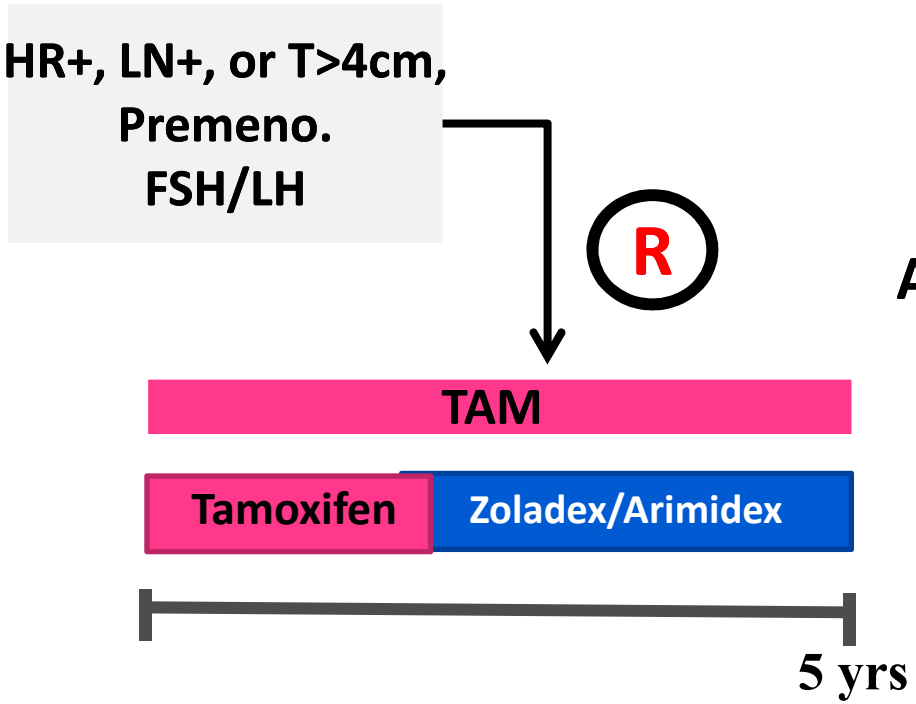
Adjuvant Endocrine therapy

Premeno. BC pts-- Ongoing Research Strategies



Adjuvant Endocrine therapy

Premeno. BC pts-- Ongoing Research Strategies

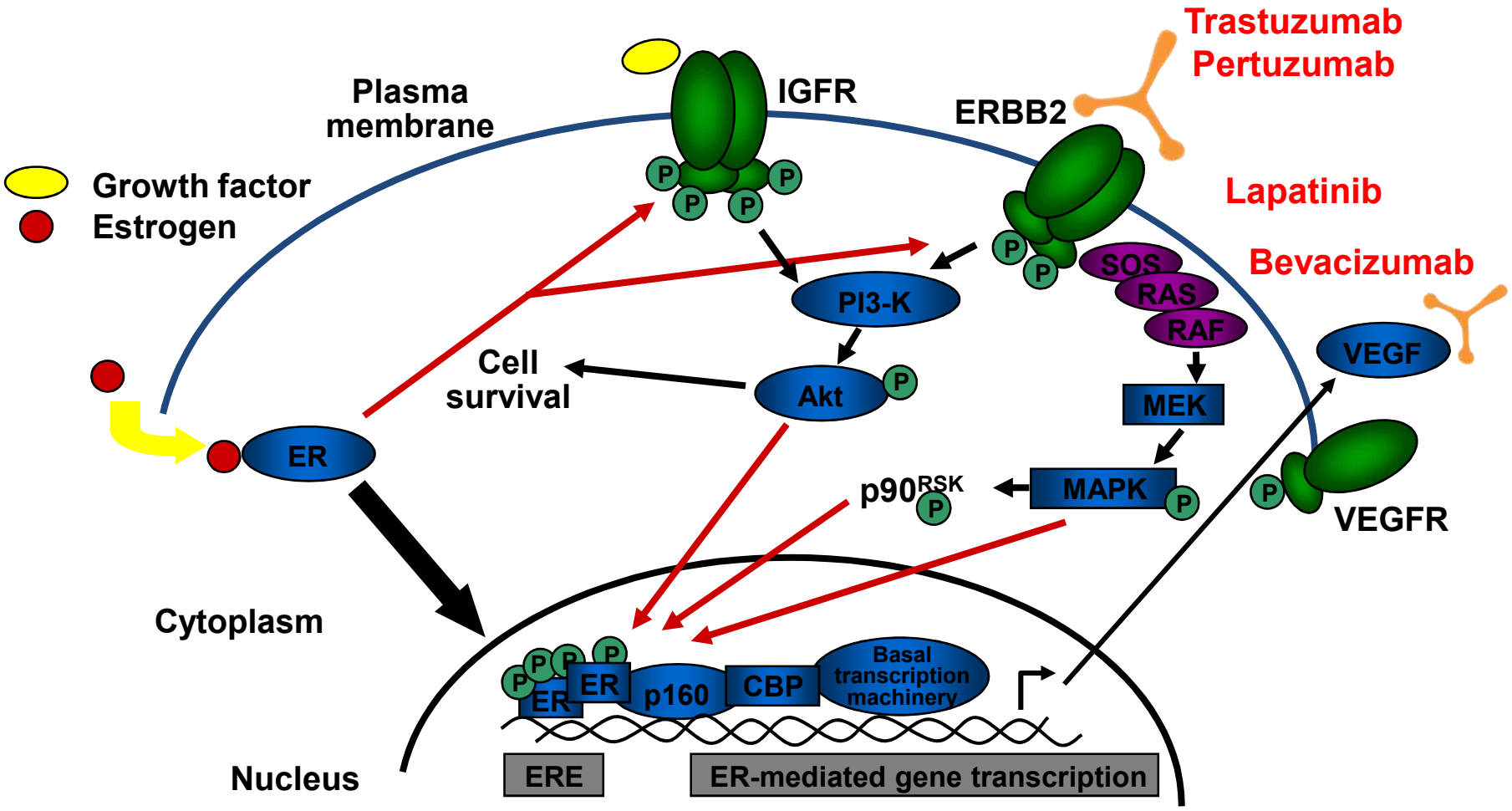


CBCSG 002

ADD (Adjuvant Double "Dex")

Data from Cancer Hospital, Fudan University

Target Therapy



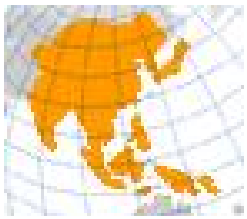
Breast Cancer Care

Better risk prediction

Better Screening

Individualized Treatment

Prognostic Assessment



Unique Features in Asia

Molecular Prognostic Tools

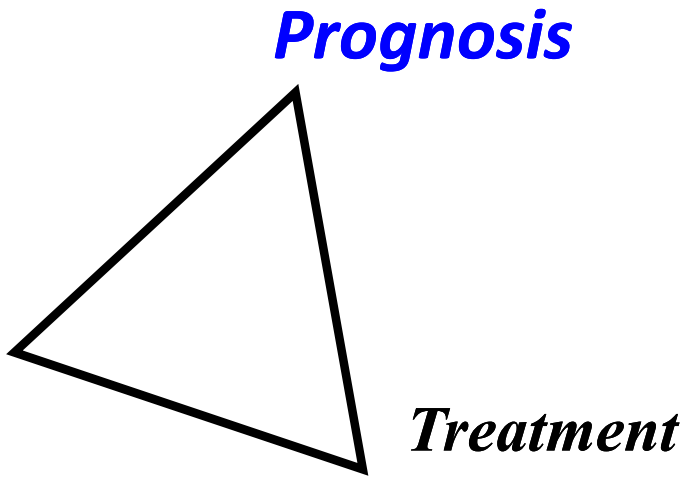
- ***Molecular Prognostic Tools*** **- Identify markers for progression and outcomes**

- ***Molecular vs. Clinicopathologic***
  - **Most clinicopath. factors known without special effort**
    - **If one can measure the molecular profile, then we don't need to know the age, sex, tumor size, and lymph node status?**

Optimized & Individualized

Molecular Profiles-Prognostic Tools

Subsets	– Intrinsic subtypes
70-gene	– 70-gene profile (MammaPrint)
76 gene	– 76-gene profile
21-gene	– Recurrence score (OncotypeDX)
2-gene ratio	– The two-gene ratio



Oncotype DX™ -Establishment

Final Selection: 16 Cancer, 5 Reference

PROLIFERATION
Ki-67
STK15
Survivin
Cyclin B1
MYBL2

HER2
GRB7
HER2

ESTROGEN
ER
PGR
Bcl2
SCUBE2

GSTM1

INVASION
Stromolysin 3
Cathepsin L2

CD68

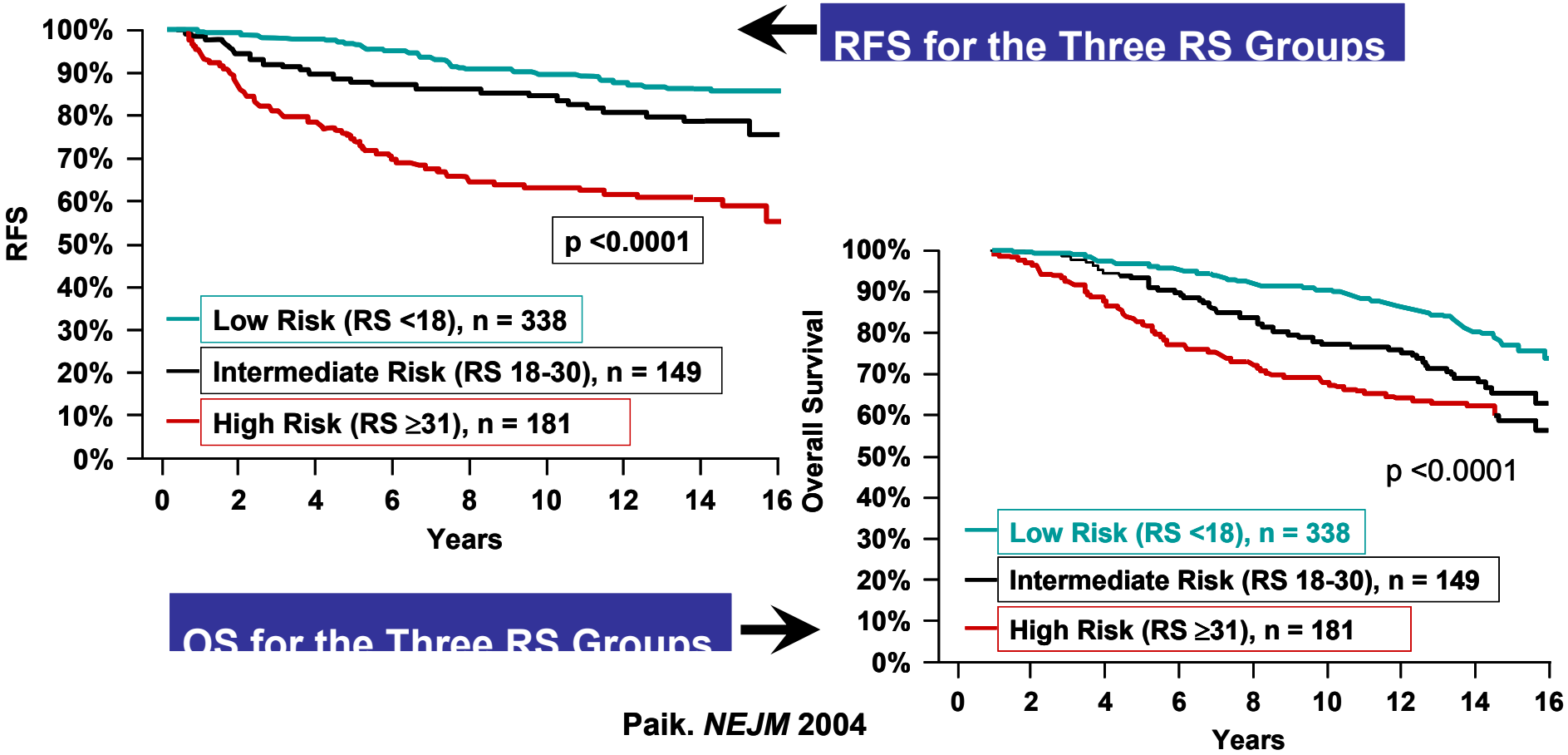
REFERENCE
Beta-actin
GAPDH
RPLPO
GUS
TFRC

BAG1

Best RT-PCR performance and most robust predictors

Early Validation: B-14 (n=668)

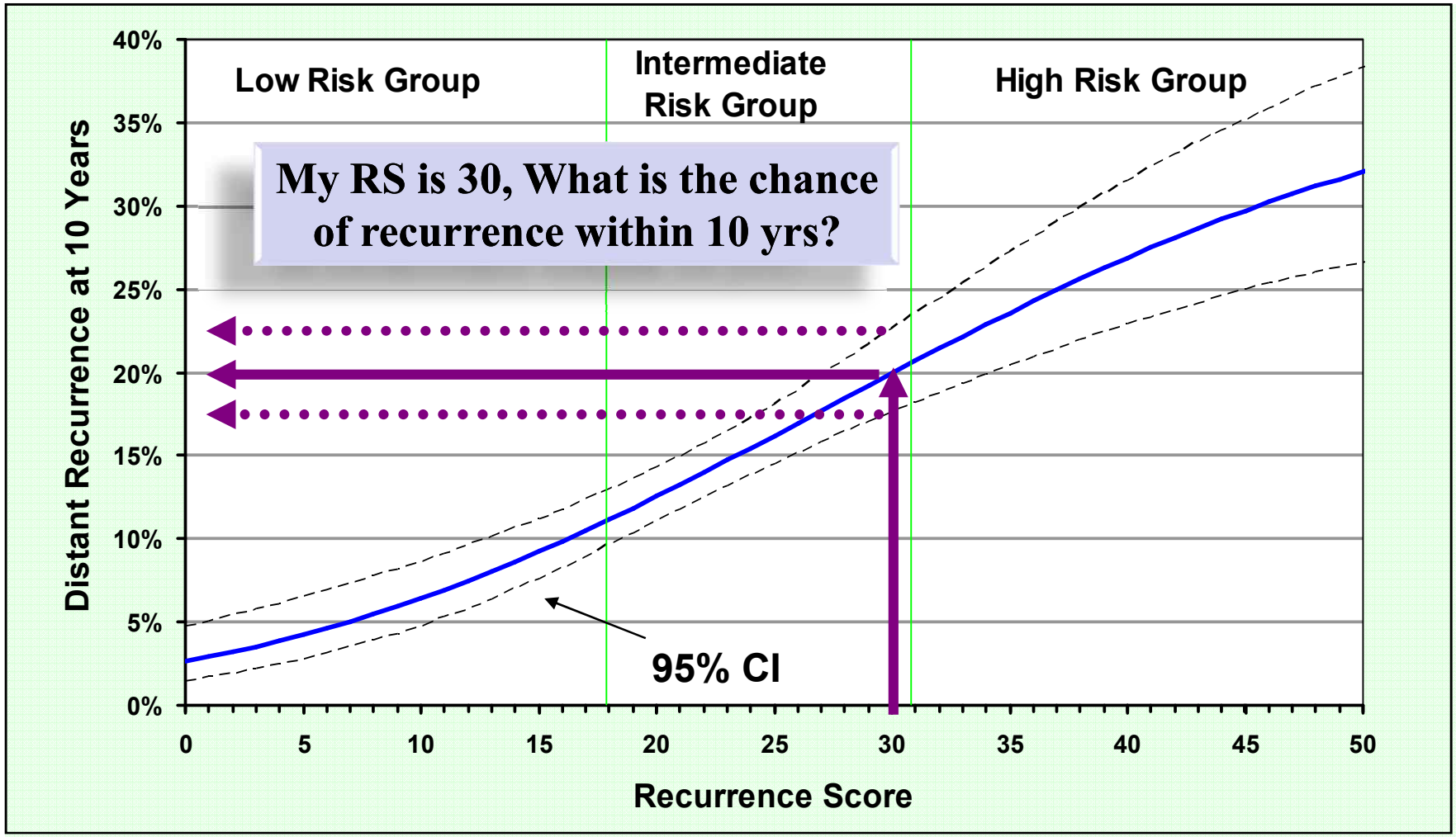
- **LN0, TAM treated**



Paik. *NEJM* 2004

Clinical Utility

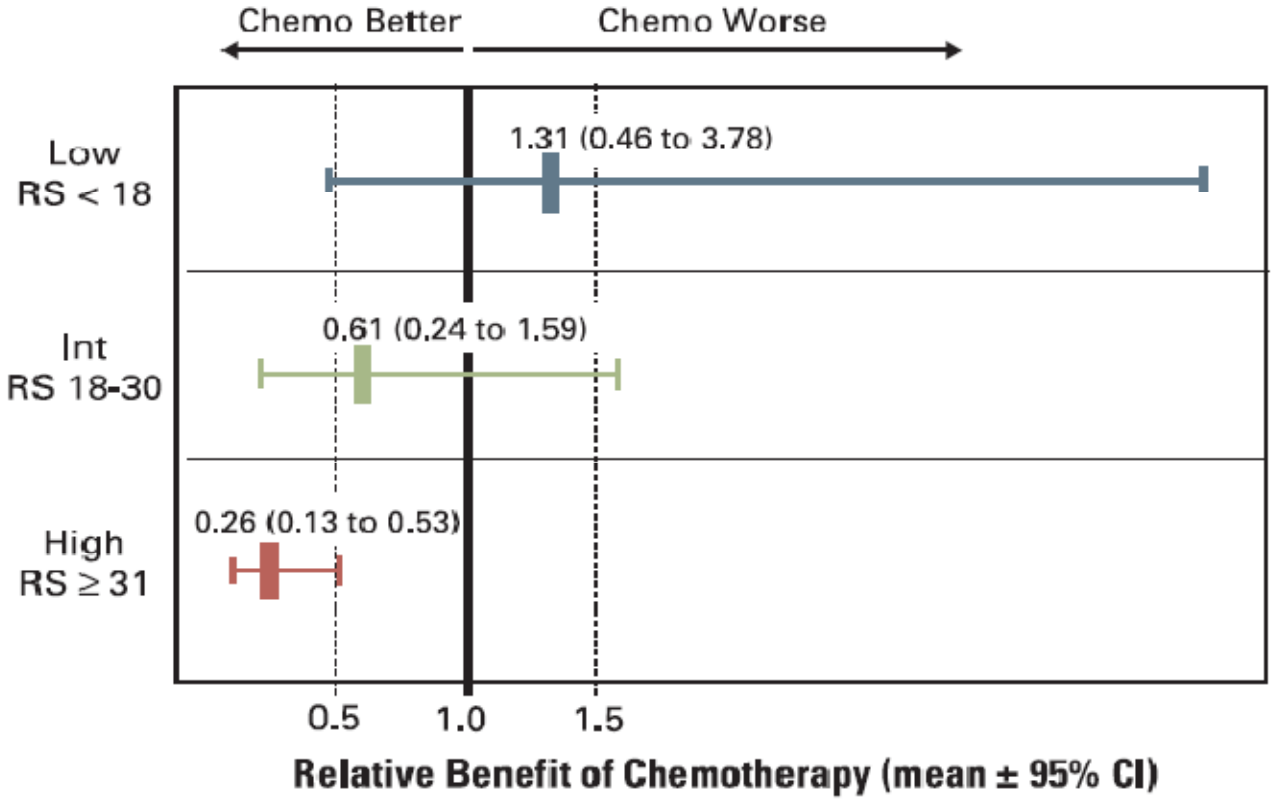
Validated prognostic test for patients treated with hormonal therapy



Paik. SABCS 2003

New indication: Chemotherapy Benefit

- **Prediction of CT Benefit in NSABP B-20 (LN0 ER+)**
  - **Pts with *high RS have a large* absolute benefit from CT**
  - **Pts with *low RS have minimal*, if any, benefit from CT**



Paik. JCO 2006

Chinesization

Primary BC
CAF/CEF Chemo.
<70 yr

MammaPrint®
Oncotype DX™
Our research: AFIQ etc

Training set n=93

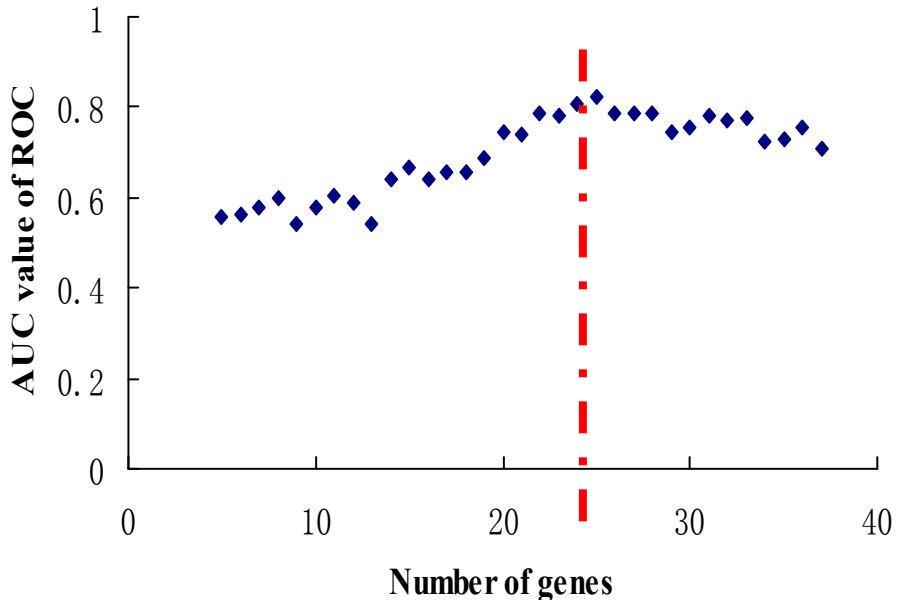
248 Candidate genes

cDNA microarray

Statistic analysis

24-gene profile

Validation

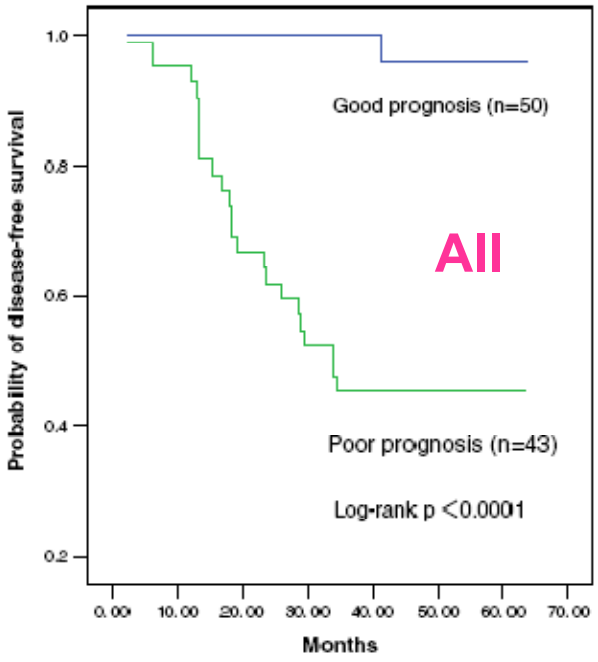


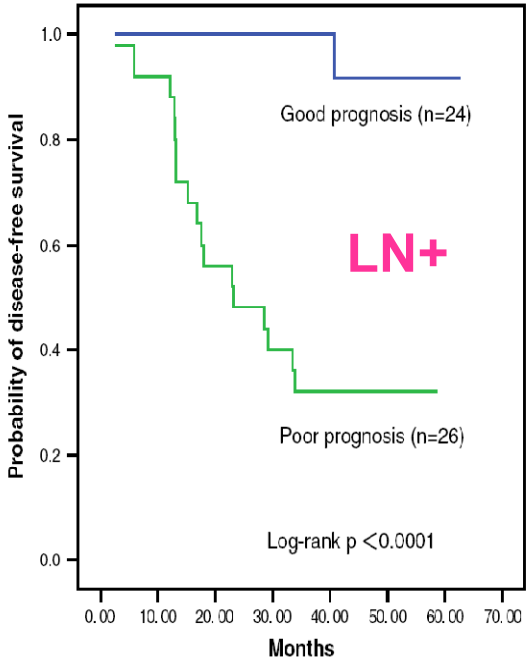
Li et al. Breast Cancer Res Tre 2008

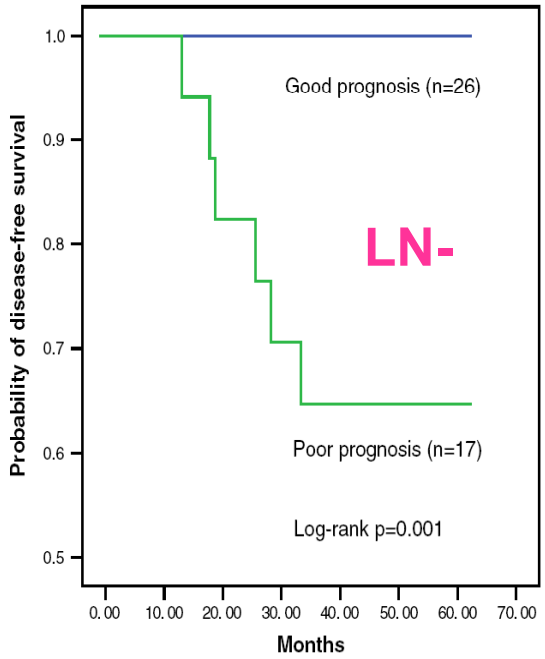
Chinesization-Verification in Training/Test Sets

Training set: Sensitivity, 92.0%; specificity, 69.1%

Validation set: Sensitivity, 90 %; specificity, 70.6%

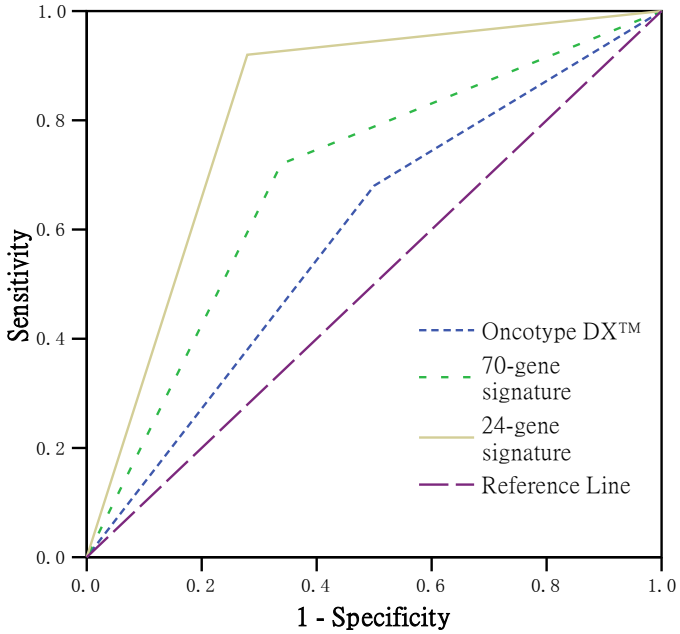






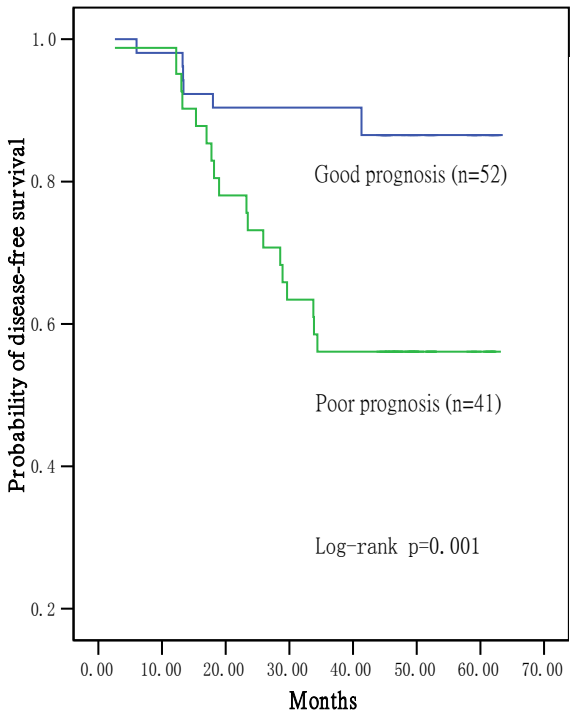
Li et al. Breast Cancer Res Tre 2008

Comparison
Our Profile vs. 70-gene vs. 21-gene

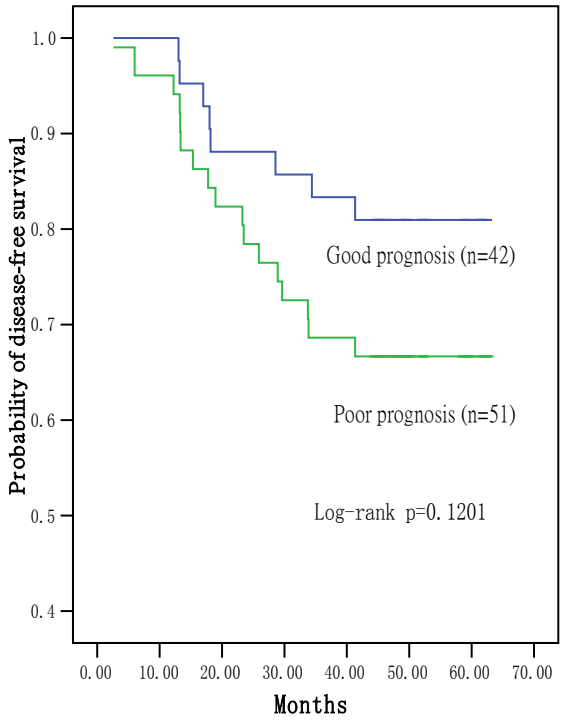


AUC	Oncotype DX™	70-gene	24-gene
	0.59	0.69	0.82

70-gene signature

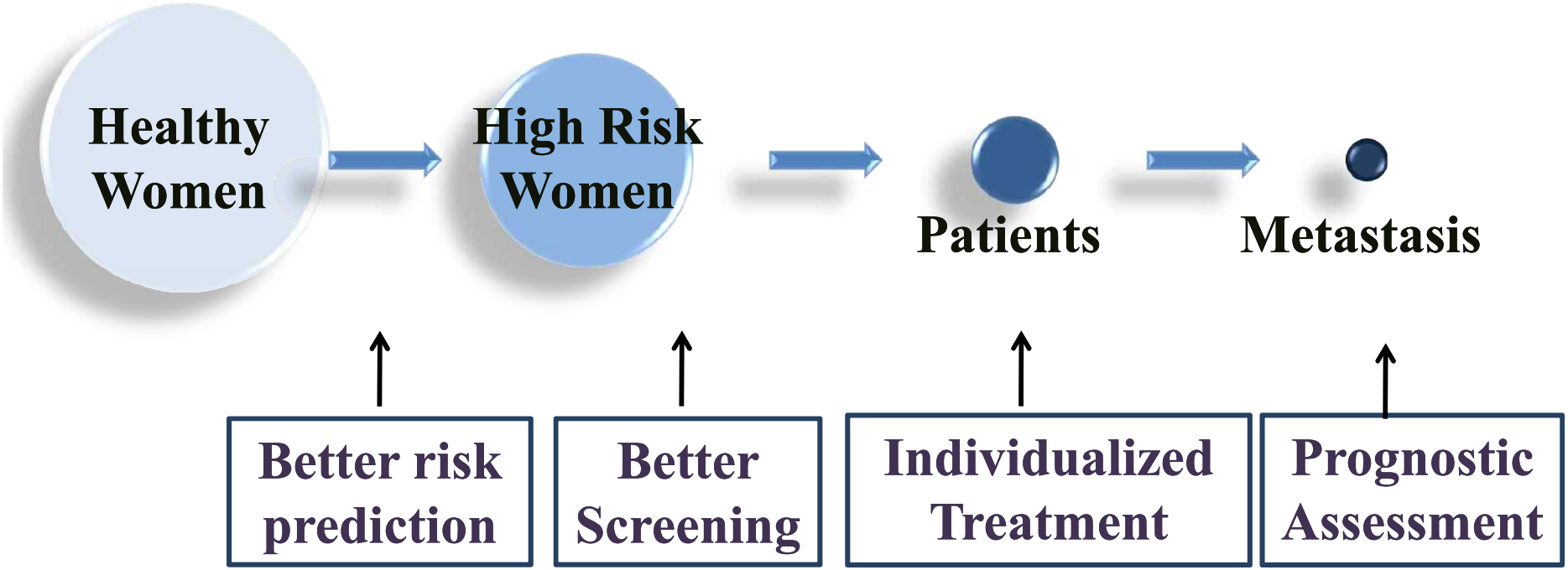


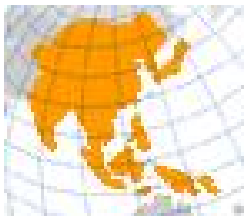
Oncotype DX™



Li et al. Breast Cancer Res Tre 2008

Delivery of Breast Cancer Care





Unique Features in Asia

Global Breast Cancer Conference 2009

with the 7th Biennial Meeting of the Asian Breast Cancer Society

Thank You