

# Different prognosis of young breast cancer patients in their 20s and 30s depending on subtype: a nationwide study from the Korean Breast Cancer Society

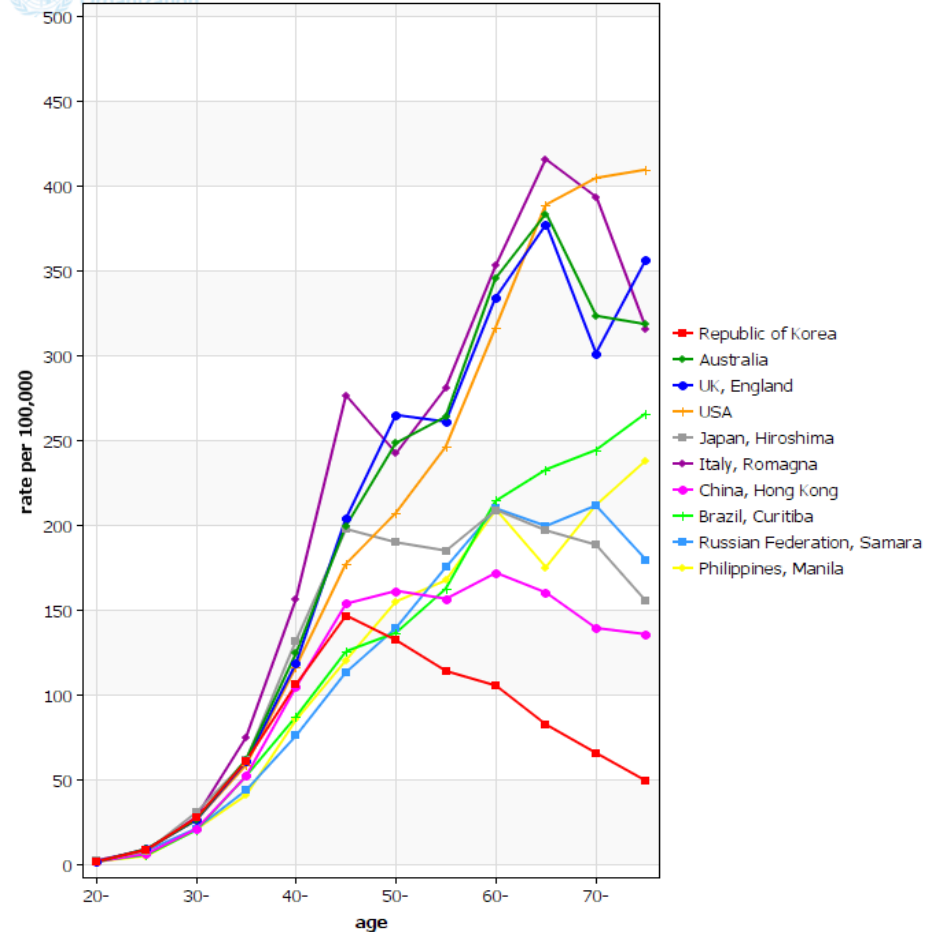
Seok Won Kim

2018. 4. 5.

# Introduction

- Breast cancer in young women (YBC) has unfavorable prognostic features and subtypes.
- Few study about effect of subtype disparities on breast cancer prognosis by age.
- Higher proportion YBC in South Korea.
- What's different in 20s YBC?

International Agency for Research on Cancer  
Breast, Female  
World Health Organization

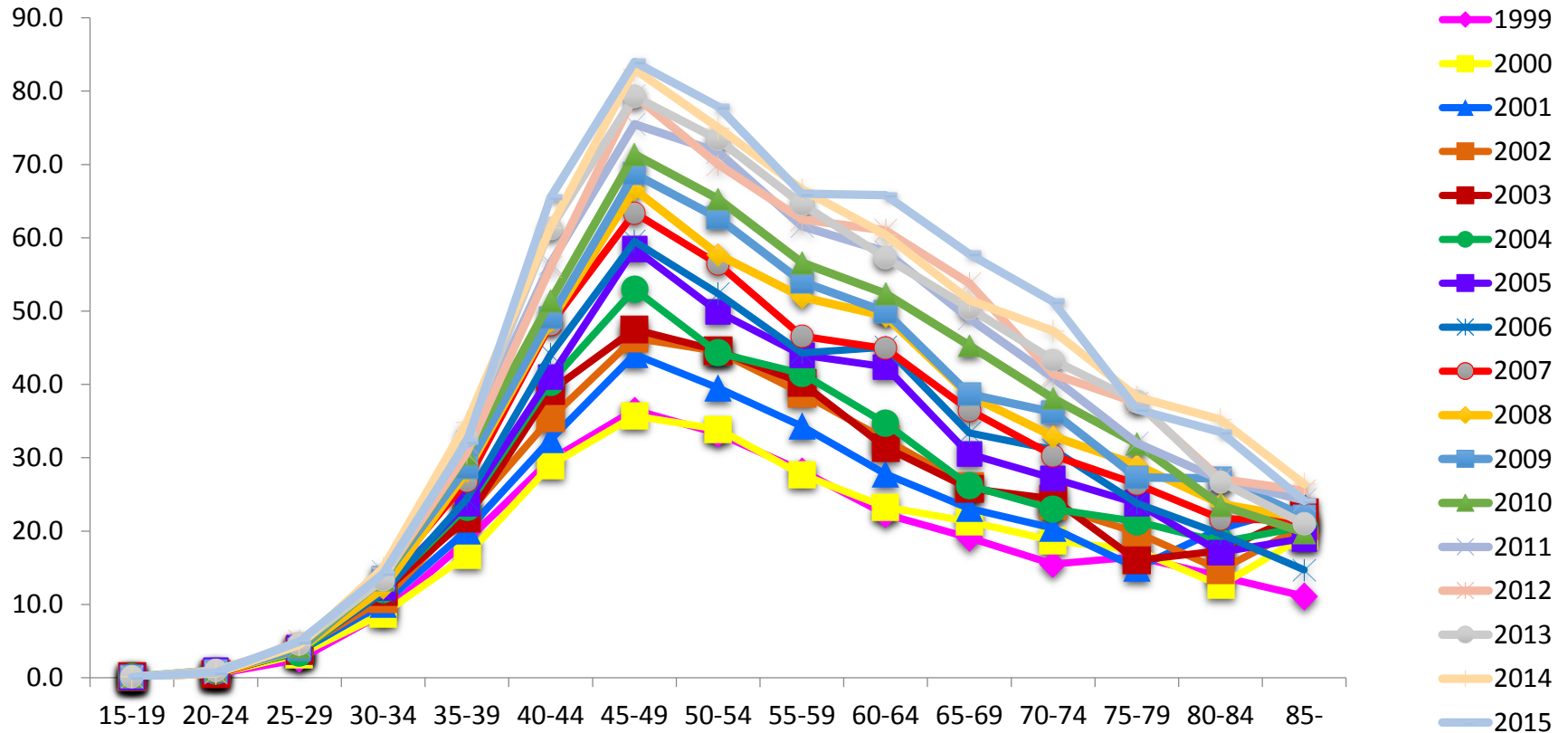


CI5X1

Cancer Incidence in Five Continents Volume XI



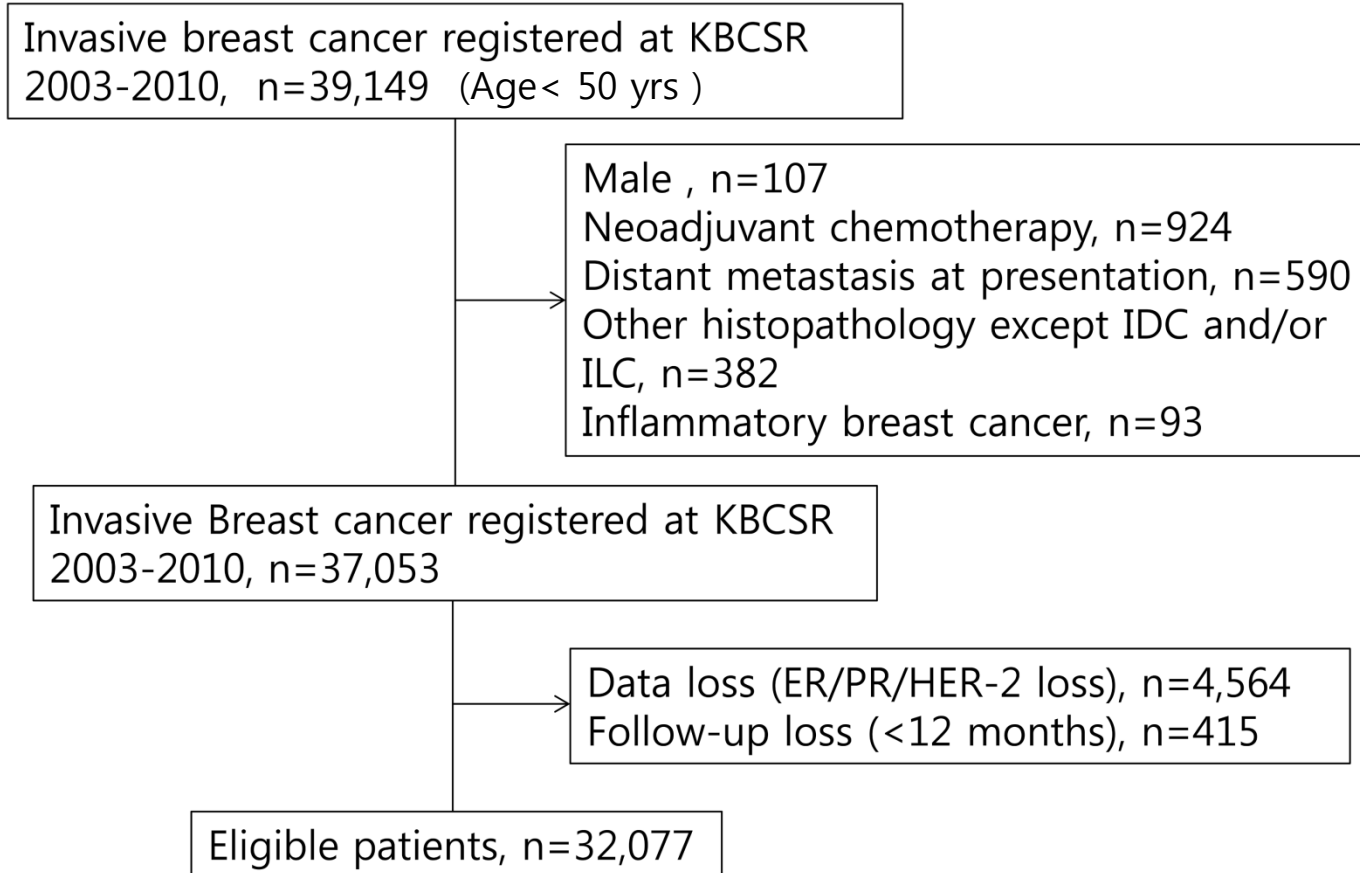
# Age-specific Incidence of Korean Female Breast Cancer



\* Patients with ICD code C50.

patients number per 100,000 women

# Study design

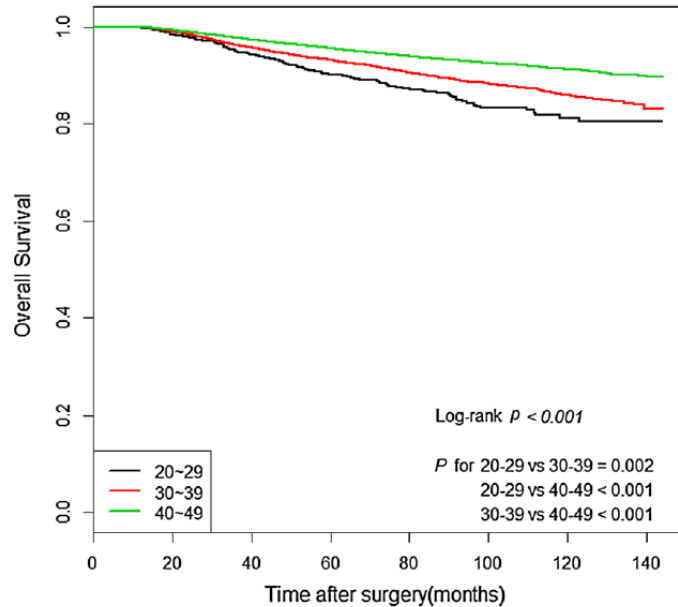


# Result I - Baseline characteristics

	20–29 (group I) N (%)	30–39 (group II) N (%)	40–49 (group III) N (%)	p value
Overall	<b>793</b>	<b>8133</b>	<b>21,867</b>	
<b>Year at operation</b>				0.0002
2003–2007	463 (58.4)	4622 (56.8)	11,910 (54.5)	
2008–2010	330 (41.6)	3511 (43.2)	9957 (45.5)	
<b>Pathologic stage</b>				
I	295 (37.2)	2928 (36.0)	<b>9288 (42.5)</b>	<0.0001
II	373 (47.0)	3644 (44.8)	9078 (41.5)	
III	119 (15.0)	1442 (17.7)	3211 (14.7)	
<b>Family history (+)</b>	<b>81 (10.2)</b>	674 (8.3)	1391 (6.4)	<0.0001
<b>High Nuclear grade</b>	<b>331 (41.7)</b>	<b>3165 (38.9)</b>	6650 (30.4)	<0.0001
<b>LVI ((+))</b>	249 (31.4)	2840 (34.9)	6711 (30.7)	<0.0001
<b>Subtype</b>				
HR(+) Her-2 (-)	<b>314 (39.6)</b>	<b>3529 (43.4)</b>	11,716 (53.6)	<0.0001
HR(+) Her-2(+)	190 (24.0)	1895 (23.3)	4775 (21.8)	
HER-2	52 (6.6)	724 (8.9)	1723 (7.9)	
TNBC	<b>237 (29.8)</b>	<b>1895 (24.4)</b>	3653 (16.7)	

# Result II

## Univariate and multivariate analyses for overall survivals



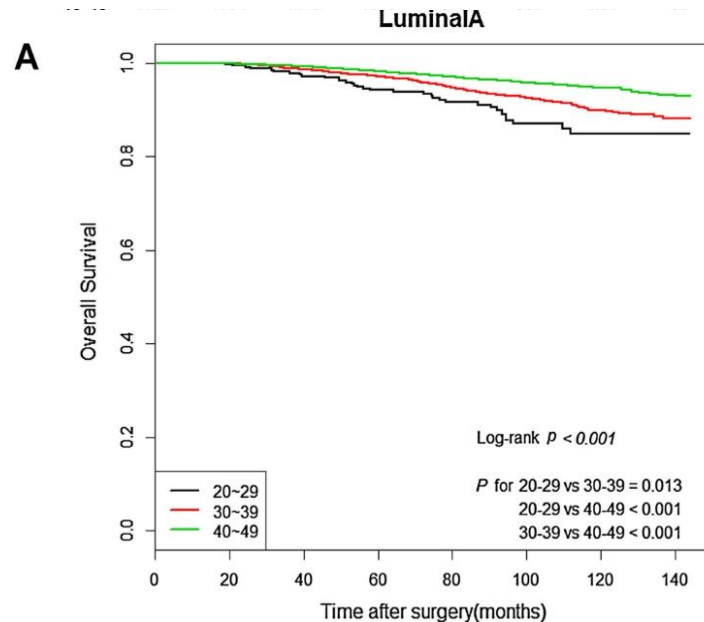
### No. At Risk

	0	20	40	60	80	100	120	140
<b>20-29</b>	793	790	748	620	438	265	121	23
<b>30-39</b>	8133	8054	7786	6484	4511	2837	1403	210
<b>40-49</b>	21967	21725	21285	17721	12211	7531	3554	560

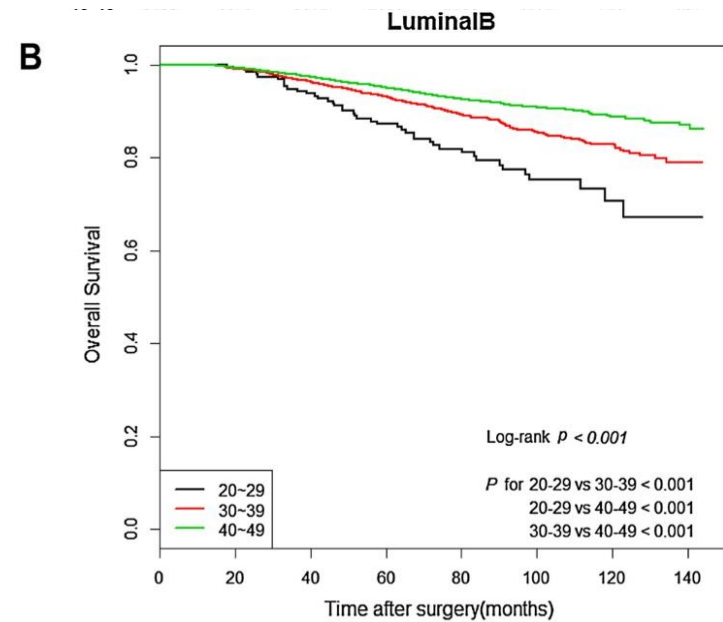
	Univariate			Multivariate		
	p value	HR	95% CI	p value	HR	95% CI
<b>Age</b>	<0.0001			<0.0001		
20-29	<0.0001	2.199	(1.819, 2.658)	<0.0001	2.015	(1.617, 2.511)
30-39	<0.0001	1.606	(1.478, 1.746)	<0.0001	1.322	(1.197, 1.461)
40-49 (ref.)						
<b>Operation period</b>						
2003-2007 (ref.)						
2008-2010	<0.0001	0.742	(0.676, 0.815)	0.005	0.822	(0.768, 0.953)
<b>Pathologic stage</b>	<0.0001			<0.0001		
I (ref.)						
II	<0.0001	2.416	(2.146, 2.719)	<0.0001	1.786	(1.534, 2.080)
III	<0.0001	8.092	(7.201, 9.094)	<0.0001	5.786	(4.927, 6.794)
<b>Family history</b>						
Yes	0.518	1.052	(0.903, 1.225)	0.9972	1.000	(0.835, 1.197)
No (ref.)						
<b>Nuclear grade</b>	<0.0001			<0.0001		
Low (ref.)						
Intermediate	<0.0001	2.549	(2.123, 3.061)		1.806	(1.430, 2.281)
High	<0.0001	4.748	(3.966, 5.684)		1.903	(1.476, 2.454)
<b>LVI</b>						
Yes	<0.0001	2.618	(2.404, 2.850)	<0.0001	1.433	(1.289, 1.592)
No (ref.)						
<b>Subtype</b>	<0.0001			<0.0001		
HR(+)Her-2(-)(ref.)						
HR(+)Her-2(+)		2.275	(2.046, 2.530)	<0.0001	1.437	(1.220, 1.692)
HER-2		3.025	(2.649, 3.455)	<0.0001	2.262	(1.829, 2.797)
TNBC		3.118	(2.815, 3.453)	<0.0001	2.514	(2.075, 3.045)

# Result III

## overall survival according to age group stratified by tumor subtype



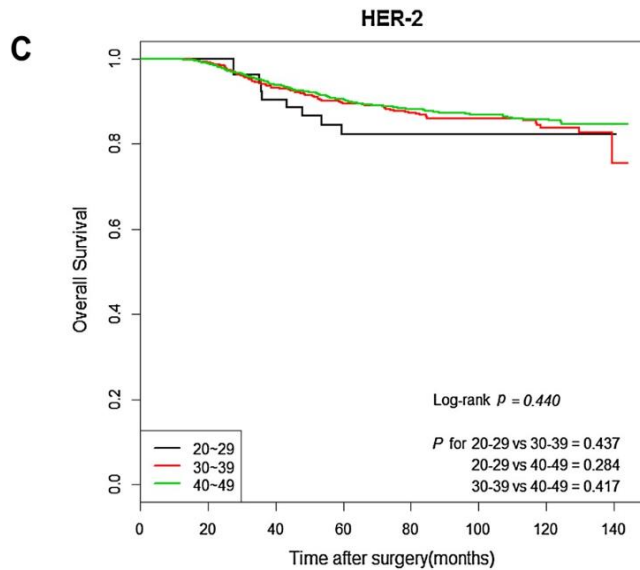
No. At Risk	0	20	40	60	80	100	120	140
20-29	314	313	305	265	191	108	53	10
30-39	3529	3526	3482	2929	2036	1268	359	97
40-49	11716	11699	11624	9684	6641	4028	1825	271



No. At Risk	0	20	40	60	80	100	120	140
20-29	190	188	178	142	101	62	23	4
30-39	1895	1878	1825	1500	1033	609	270	38
40-49	4775	4743	4650	3818	2659	1573	713	126

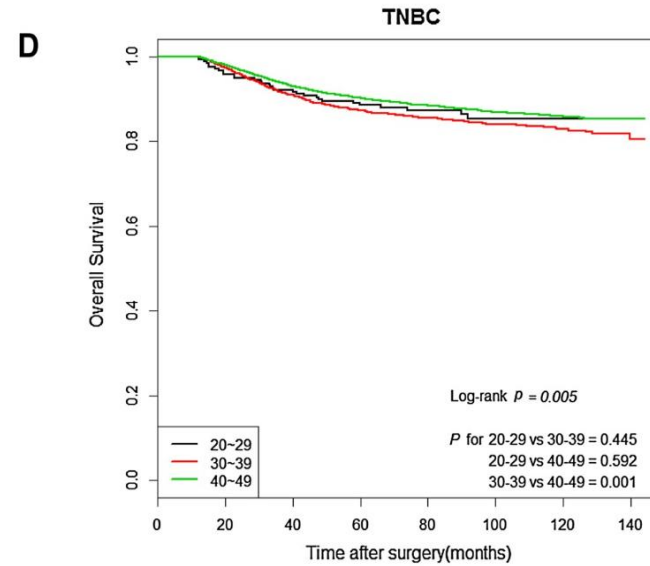
# Result IV

## overall survival according to age group stratified by tumor subtype II



No. At Risk

<b>20-29</b>	52	52	47	37	27	20	8	1
<b>30-39</b>	724	717	674	547	380	262	126	17
<b>40-49</b>	1723	1704	1616	1319	878	560	281	39



No. At Risk

<b>20-29</b>	237	227	219	176	119	75	37	8
<b>30-39</b>	1985	1933	1805	1509	1062	698	348	58
<b>40-49</b>	3653	3579	3395	2900	2033	1370	735	124

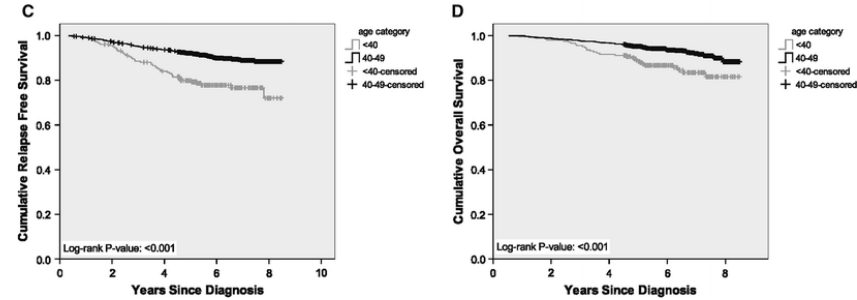


# Discussion I

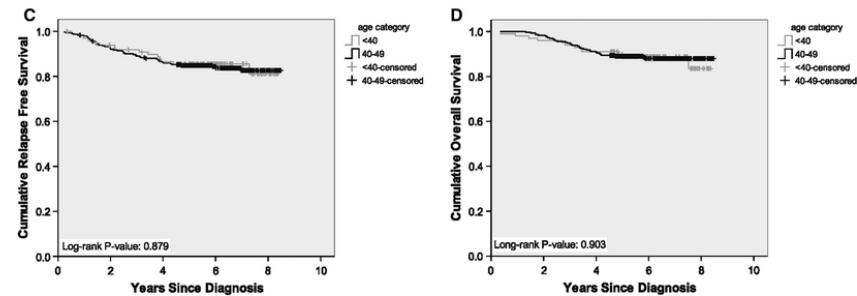
- Recent studies about breast cancer in young women support results of our study
- The effect of age varies with subtype.
- Age <40 yrs -inferior RFS and OS for Luminal BC in the modern era

Sheridan W. et al. Breast Cancer Res Treat 2014 Oct.

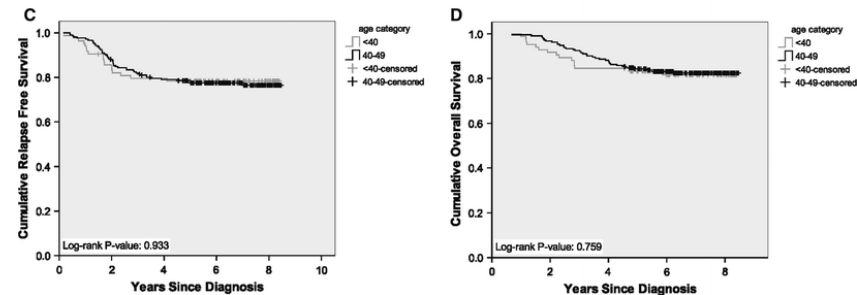
## Luminal BC



## Her-2 BC



## TNBC



# Discussion II

## Age and Breast Cancer Mortality

**Table 3.** Age and Breast Cancer Mortality According to Breast Cancer Subtype

Breast Cancer Subtype and Age (years)	No. of Breast Cancers	Breast Cancer Deaths, No. (%)	HR (95% CI)*	HR (95% CI)†	HR (95% CI)‡
<b>Luminal A</b>					
≤ 40	510	38 (7.5)	2.7 (1.8 to 4.1)	2.1 (1.4 to 3.2)	1.7 (1.1 to 2.7)
41-50	1,871	40 (2.1)	0.9 (0.6 to 1.3)	0.8 (0.5 to 1.2)	0.7 (0.5 to 1.1)
51-60	2,391	58 (2.4)	1.0 (REF)	1.0 (REF)	1.0 (REF)
61-70	1,779	36 (2.0)	0.8 (0.5 to 1.3)	1.0 (0.6 to 1.6)	0.9 (0.6 to 1.5)
> 70	1,187	29 (2.4)	0.9 (0.5 to 1.8)	1.5 (0.8 to 3.1)	1.5 (0.7 to 3.0)
<b>Luminal B</b>					
≤ 40	698	85 (12.2)	1.6 (1.2 to 2.2)	1.4 (1.1 to 1.9)	1.2 (0.9 to 1.7)
41-50	1,514	102 (6.7)	0.9 (0.7 to 1.12)	0.8 (0.6 to 1.1)	0.7 (0.6 to 1.0)
51-60	1,428	106 (7.4)	1.0 (REF)	1.0 (REF)	1.0 (REF)
61-70	875	44 (5.0)	0.7 (0.5 to 1.0)	0.7 (0.5 to 1.1)	0.7 (0.5 to 1.0)
> 70	634	37 (5.8)	1.0 (0.6 to 1.7)	1.2 (0.7 to 2.1)	1.0 (0.6 to 1.8)
<b>HER2 type</b>					
≤ 40	189	30 (15.9)	1.2 (0.7 to 1.8)	1.2 (0.8 to 1.9)	1.1 (0.7 to 1.7)
41-50	343	29 (8.5)	0.6 (0.4 to 1.0)	0.6 (0.4 to 1.0)	0.6 (0.3 to 0.9)
51-60	410	59 (14.4)	1.0 (REF)	1.0 (REF)	1.0 (REF)
61-70	203	23 (11.3)	0.9 (0.5 to 1.5)	1.2 (0.7 to 2.0)	1.0 (0.5 to 1.8)
> 70	98	11 (11.2)	1.1 (0.4 to 2.7)	1.6 (0.6 to 4.0)	1.2 (0.4 to 3.2)
<b>Triple negative</b>					
≤ 40	478	88 (18.4)	1.4 (1.1 to 1.9)	1.4 (1.0 to 1.8)	1.3 (0.9 to 1.7)
41-50	818	146 (17.9)	1.4 (1.1 to 1.8)	1.3 (1.0 to 1.7)	1.3 (1.0 to 1.7)
51-60	861	115 (13.4)	1.0 (REF)	1.0 (REF)	1.0 (REF)
61-70	495	53 (10.7)	0.7 (0.5 to 1.0)	0.8 (0.5 to 1.1)	0.7 (0.5 to 1.1)
> 70	234	28 (12.0)	0.7 (0.4 to 1.2)	0.7 (0.4 to 1.3)	0.7 (0.4 to 1.2)

Abbreviation: HER2, human epidermal growth factor receptor 2; REF, reference.

\*Adjusted for race/ethnicity, insurance, employment, center, and education.

†Adjusted for race/ethnicity, insurance, employment, center, education, treatment, stage at diagnosis, grade, and year of diagnosis.

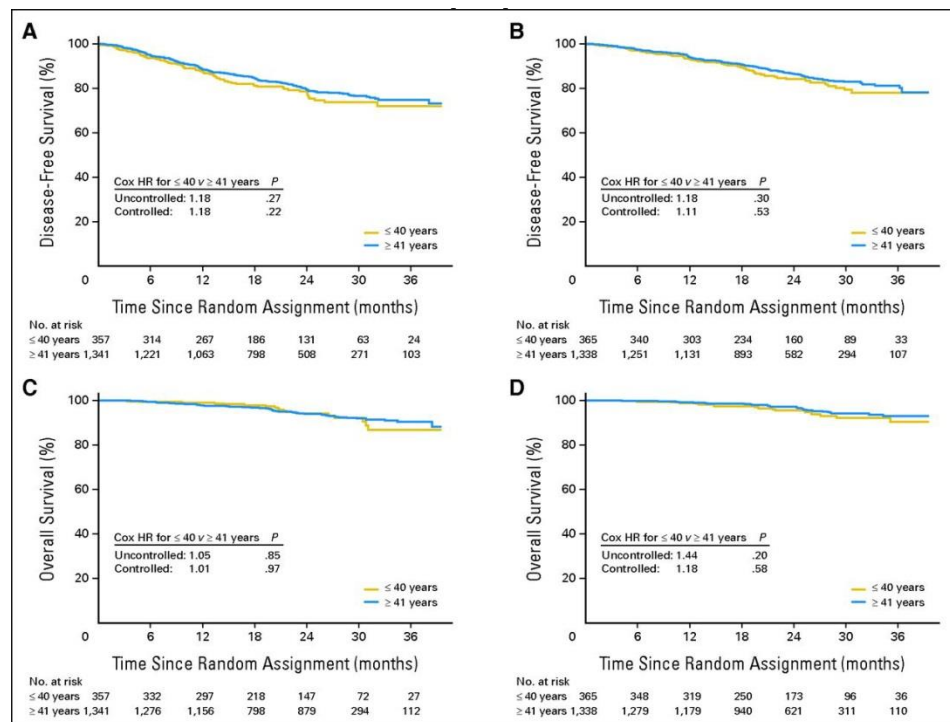
‡Adjusted for race/ethnicity, insurance, employment, center, education, treatment, stage at diagnosis, grade, year of diagnosis, and detection method (symptomatic or screen).

Ann H. Partridge et al. *JCO* 2016, 34, 3308-3314.

# Discussion III

## HERA trial

- Randomized controlled trial of women with early-stage HER2-positive breast cancer.
- Age was not strongly associated with risk of early recurrence or prediction of benefit from trastuzumab therapy.

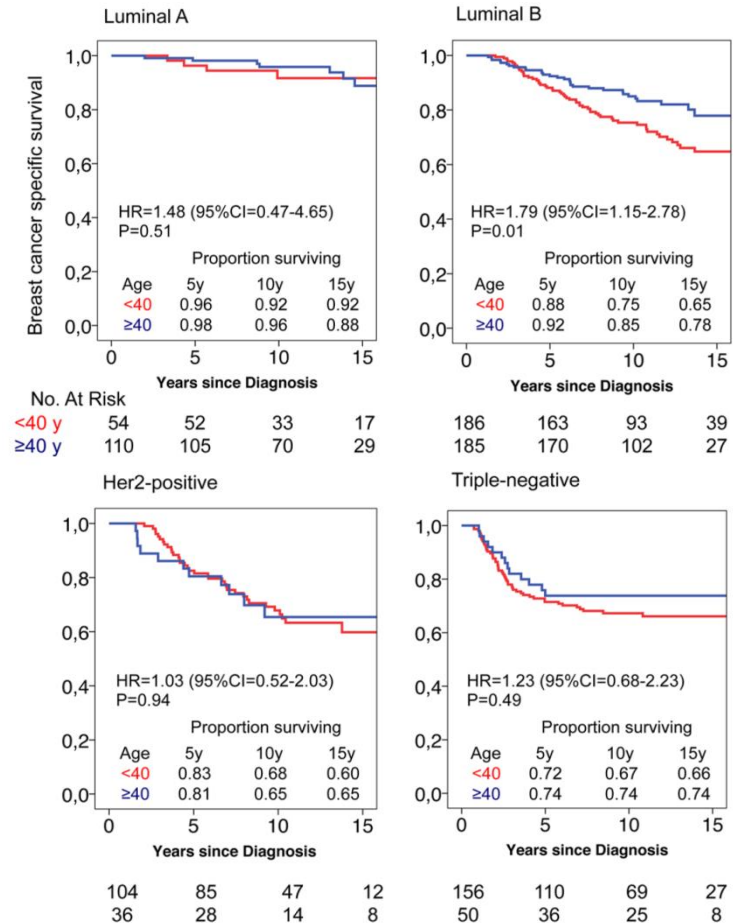


Ann H. Partridge et al. *JCO* 2013, 31, 2692-2698.

# Discussion IV

## discrepant results

- Sweden's six health-care regions, a population-based cohort
- Breast cancer-specific survival by age, stage, grade, and subtype for women with primary breast cancer stage I-III diagnosed 1992–2005 (N = 1120) divided by age <40 years and ≥40 years.
- N=50 for Luminal A, age <40 years group.



Hanna Fredholm et al. Breast Cancer Res Treat 2016 Nov;160(1):131-143.

# Discussion V

---

why worse prognosis with luminal breast cancer ?

Maybe...

1. Reduced chemotherapy-induced amenorrhea
2. Weakly HR positive tumors
3. Weaker mRNA expression for ER $\alpha$ , ER $\beta$  and PR
4. Nonadherence and discontinuance of adjuvant endocrine therapy

# Discussion VI : Limitation of this study

---

- retrospective design
- Lack of detailed patient oncological outcome such as recurrence.
- Lack of proliferation markers such as Ki-67 and on administration of adjuvant treatment such as trastuzumab and goserelin.
- Lack of adherence to adjuvant endocrine therapy
- IHC markers (ER, PR, and HER-2) as surrogates for gene expression.

# Summary

---

- Breast cancer patients in their 20s had unfavorable characteristics and worse prognosis than patients in their 30s and 40s.
- Women in their 20s with breast cancer with luminal subtype showed significantly worse prognosis than 30s & 40s, while HER-2 and TNBC subtypes did not.

# Thank you for Attention.

End of document