

# Effect of Neoadjuvant Systemic Therapy on Surgery of Luminal Breast Cancers

Marzieh Mohammadizavieh

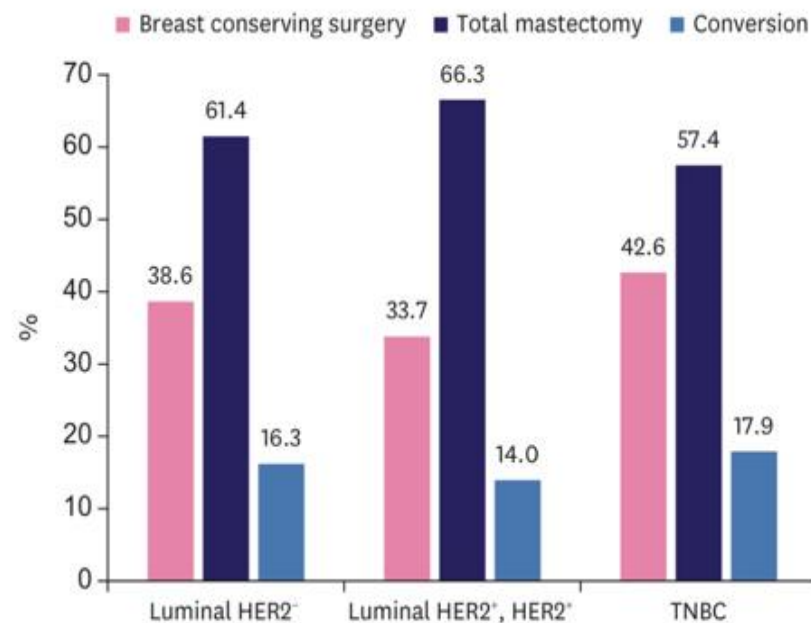
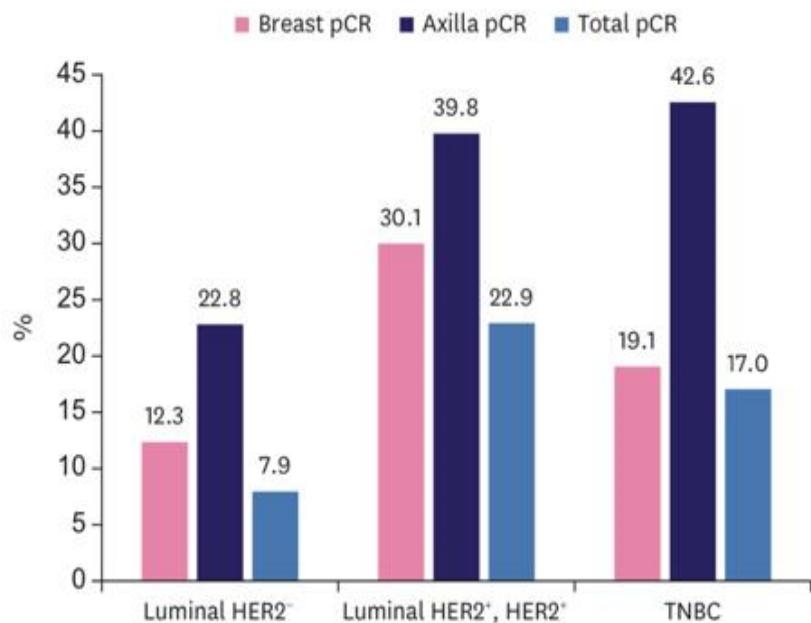
Breast Surgeon, Arash Women's Hospital, TUMS

# Introduction

- The goal of NAC is to improve surgical outcomes
- locally advanced cancers, stage III
- Stage IIB, T3 who desire BCS
- NAC more likely eradicate micrometastatic disease
- HR+,HER2- tumors are less likely to respond to NAC
- Several studies have demonstrated similar outcomes in NAC and adjuvant chemotherapy

# NAC in luminalA

- Luminal A encompasses 50-60% all BC
- pCR 8%
- pCR is associated with survival benefit
- pCR prognostic impact is not clear in luminal BC
- 19.2% increase rate of BCS
- 6% convert positive axilla to negative



**Figure 2.** pCR rates and BCS conversion rates in neoadjuvant chemotherapy by histologic subtype.  
 pCR = pathologic complete response; BCS = breast-conserving surgery; HER2 = human epidermal growth factor receptor 2; TNBC = triple-negative breast cancer.

# CR ratio

Biopsy ER and PR status ( $\chi^2=21.8$ ; $p<0.0001$ )			
ER+ and PR+	31.9 (83/260)		0.77 (0.64-0.92)
ER+ and PR-	26.6 (21/79)		0.71 (0.50-1.02)
ER- and PR-	35.5 (117/330)		1.24 (1.09-1.41)
Unknown	25.4 (325/1278)		0.73 (0.49-1.08)

**Table 3**  
Pathologic response evaluation.

pCR, N (%)	9 (7.9)
Sataloff grade – primary Tumor, N (%)	
A	10 (9.3)
B	50 (46.7)
C	40 (37.4)
D	7 (6.5)
Sataloff grade – nodal, N (%)	
A	6 (5.7)
B	25 (23.6)
C	46 (43.4)
D	29 (27.4)
ypN0, N (%)	21 (18.4)
Downstaged, N (%)	37 (33.6)
Baseline Tumor size, mm, median (IQR)	39 (27–50)
Post neoadjuvant Tumor size, mm, median (IQR)	35 (21–60)
Change in size, mm, median (IQR)	–2 (–16 – 10)
Relative change in size, median % (IQR)	–6.3 (–45.2 – 26.3)
Change in size, N (%)	
Reduced	48 (44.9)
Stable	24 (22.4)
Increased	35 (32.7)

pCR, pathologic complete response.

# Factors predict response

- Better response in: higher cT, PR-, young, high grade, ductal type, AC-T regimen
- High Ki67 rate is independent prognostic factor in tumor response rate

Another article:

- cCR: premenopouse, high grade, high Ki67
- pCR: ductal, high grade, high Ki67
- Low expresion of PR only in luminal HER2+ is predictive
- PR+ predicted increased risk of nodal positivity

**Table 4.** Univariate and multivariate logistic regression analysis of luminal HER2<sup>-</sup> breast cancer according to the tumor response rate

Variables	OR (95% CI)	<i>p</i> -value	Adjusted OR (95% CI)	<i>p</i> -value
<b>Age (yr)</b>				
< 50	Reference		Reference	
≥ 50	1.931 (0.909–4.105)	0.087	1.368 (0.573–3.265)	0.481
<b>Clinical tumor stage</b>				
Low (T1, T2)	Reference		Reference	
High (T3, T4)	0.517 (0.237–1.128)	0.098	0.693 (0.279–1.721)	0.430
<b>Clinical nodal stage</b>				
Low (N1)	Reference		Reference	
High (N2, N3)	2.290 (0.987–5.310)	0.054	2.315 (0.923–5.805)	0.073
<b>PR</b>				
Negative	Reference		Reference	
Positive	0.797 (0.335–1.895)	0.608	0.906 (0.330–2.486)	0.847
<b>Ki-67 expression</b>				
Low (< 14%)	Reference		Reference	
High (≥ 14%)	3.341 (1.541–7.241)	0.002	2.478 (1.066–5.762)	0.035
<b>Histologic grade</b>				
Low (grade 1 or 2)	Reference		Reference	
High (grade 3)	2.442 (0.673–8.865)	0.175	1.256 (0.271–5.820)	0.771
<b>BCS conversion</b>				
No	Reference		Reference	
Yes	5.083 (1.317–19.617)	0.018	5.793 (1.358–24.708)	0.018
<b>Axilla pCR</b>				
No	Reference		Reference	
Yes	3.937 (1.539–10.073)	0.004	3.715 (1.356–10.177)	0.011

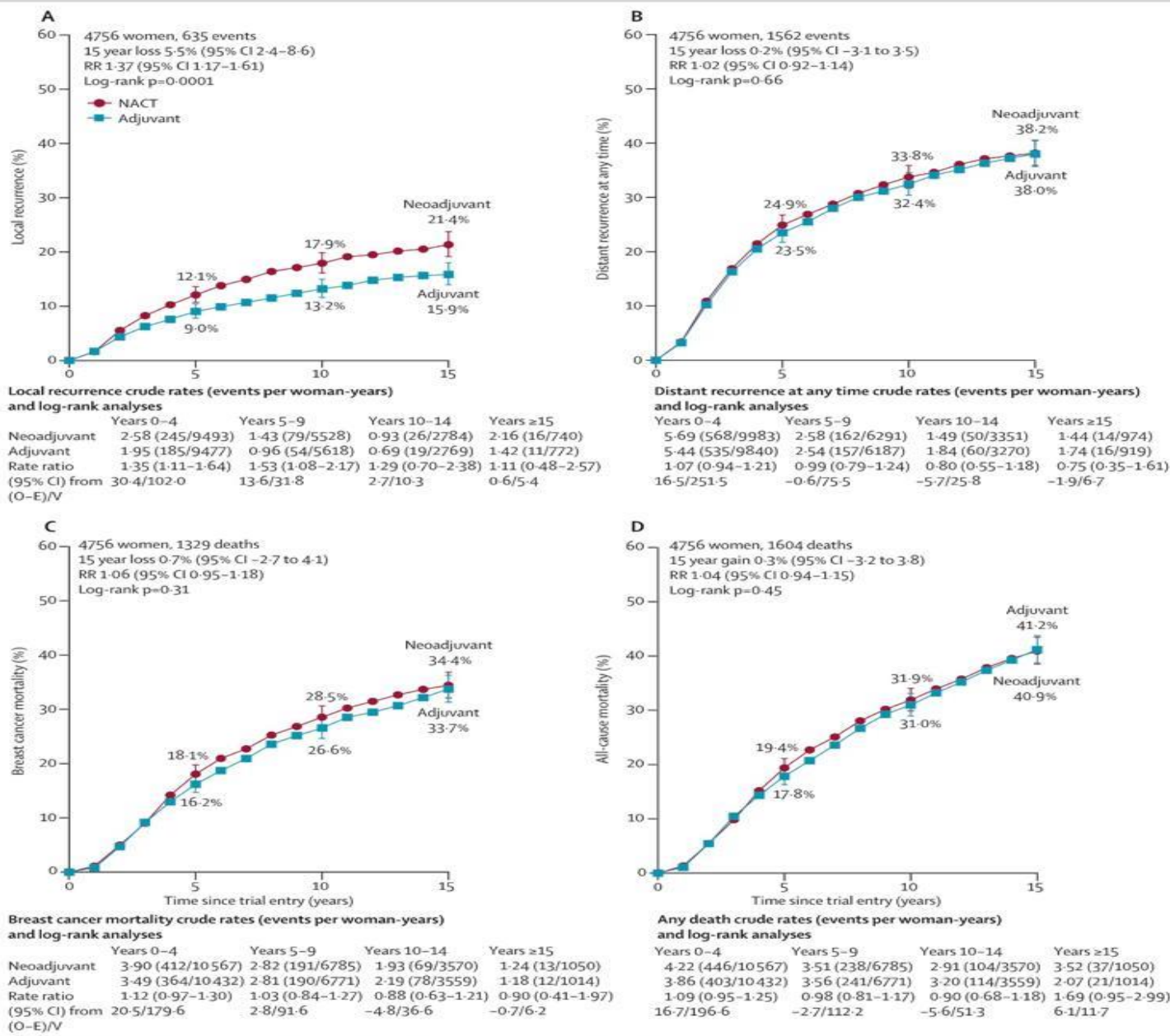
HER2 = human epidermal growth factor receptor 2; OR = odd ratio; CI = confidence interval; PR = progesterone receptor; BCS = breast conserving surgery; pCR = pathologic complete response.

## Long-term outcomes for neoadjuvant versus adjuvant chemotherapy in early breast cancer: meta-analysis of individual patient data from ten randomised trials

*Early Breast Cancer Trialists' Collaborative Group (EBCTCG)\**

- Meta-analysis from 10 randomised trials
- 1983-2002
- med FU 9y, last FU 2013
- pCR is higher in ER- patients
- higher local recurrence after NAC
- no difference in mortality





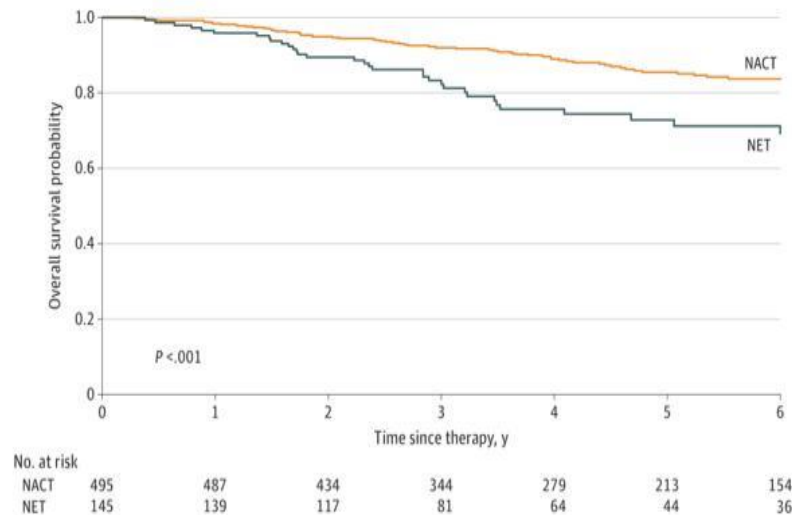
**Figure 2: Effect of neoadjuvant versus adjuvant chemotherapy on recurrence and mortality**

Local recurrence (A), distant recurrence (B), breast cancer mortality (C), and death from any cause (D). Three trials recorded causes of any deaths but only the first breast cancer event. Hence, for these trials, distant recurrence includes the first distant recurrence as the first event and death from breast cancer. Error bars are 95% CIs. NACT=neoadjuvant chemotherapy. O-E=observed minus expected. RR=rate ratio. V=variance of O-E.

# NAC vs NET

- Similar BCS rate
- More pCR in NAC
- Greater survival rate in NAC

Figure. Kaplan-Meier Survival Curve for Overall Survival in Patients With Strongly Hormone Receptor-Positive and Human Epidermal Growth Factor Receptor 2-Negative Invasive Ductal Carcinoma Receiving Neoadjuvant Treatments

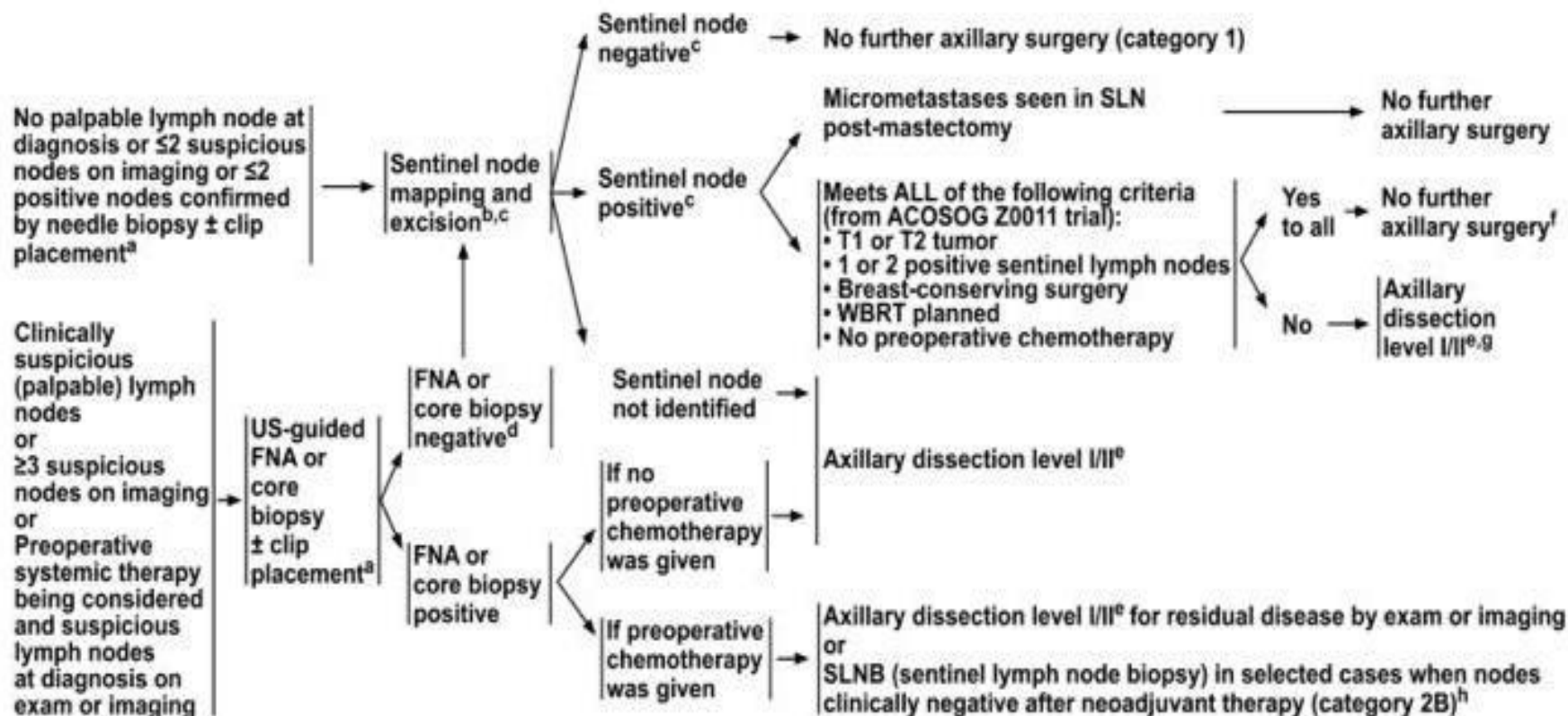


NACT indicates neoadjuvant chemotherapy; NET, neoadjuvant endocrine therapy.

- low pCR is not a sufficient reason to hesitate performing NAC in luminal BC
- NAC provides reduction in tumor size and consequently improve BCS rate
- NICE guidelines recommendation: T>5cm with >4 involved node or borderline breast, axilla conservable



### SURGICAL AXILLARY STAGING



# Thanks for your attention

