

Dr. Kim has no relevant financial relationships with commercial interests to disclose.

This presentation is the intellectual property of the author/presenter.

Surgical treatment after neoadjuvant systemic therapy in young women with breast cancer: Results from a prospective cohort study

Hee Jeong Kim^{1,2}, Laura Dominici^{1,3}, Shoshana Rosenberg¹, Linda Ma Pak^{1,3}, Phillip D. Poorvu¹, Kathryn Ruddy⁴,
Rulla Tamimi³, Lidia Schapira⁵, Steven Come⁶, Jeffrey Peppercom⁷, Virginia Borges⁸, Ellen Warner⁹, Hilde
Vardeh⁶, Laura Collins⁶, Rachel Gaither¹, Tari King^{1,3}, Ann H. Partridge¹

¹Dana-Farber Cancer Institute, Boston, MA; ²Asan Medical Center, Seoul, South Korea; ³Brigham and Women's Hospital, Boston, MA; ⁴Mayo Clinic, Rochester, MN; ⁵Stanford University, Palo Alto, CA; ⁶Beth Israel Deaconess Medical Center, Boston, MA; ⁷Massachusetts General Hospital, Boston, MA; ⁸University of Colorado Cancer Center, Aurora, CO; ⁹Sunnybrook Health Science center, Toronto, ONT



Disclosures

- All authors declare no conflicts of interest

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Background

- Randomized controlled trials (RCTs) have demonstrated that eligibility for breast conserving surgery (BCS) can be increased after neoadjuvant chemotherapy (NAC)
- Despite eligibility for BCS, analyses from large pre-operative RCTs have revealed many women are undergoing mastectomy:
 - 76% of BCS eligible patients had mastectomy in CALGB 40601 (HER2+)
 - 69% of BCS eligible patients had mastectomy in CALGB 40603 (TNBC)

Golshan et al 2015 Annals of Surg; Golshan et al 2016 BCRT

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Background

- Young women are more likely to present with large tumors and may benefit from a neoadjuvant systemic approach
- Recent data suggest that response rates, including pathologic complete response (pCR), are higher in women <40 years than in older women
- Little is known about how response to NAC influences surgical decision making in young women

Loibl et al 2015 BCRT

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Objectives

- To describe the use of and response to NAC among young women with breast cancer
- To evaluate choice of surgical procedure considering:
 - Before- and after- NAC eligibility for BCS
 - Clinical and pathological response to NAC
- To evaluate reasons for not undergoing BCS when BCS eligible after NAC

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Methods



- The Young Women`s Breast Cancer Study (YWS)
 - Multicenter prospective cohort
 - Women age ≤ 40 at diagnosis of breast cancer identified through pathology record review
 - 12 participating hospitals (academic and community)
 - 1302 women enrolled from October 2006 to June 2016

- The study was established to explore biological, medical and psychosocial issues in young breast cancer patients

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Methods

- Participants in YWS are enrolled after diagnosis and surveyed at baseline and in follow-up; medical records are reviewed serially

- For this analysis, patient characteristics were taken from baseline survey; medical records were reviewed to determine:
 - Tumor characteristics and stage
 - Eligibility for BCS (before and after NAC)
 - Clinical and pathologic response to NAC
 - BCS as initial procedure and definitive surgery
 - Reasons for mastectomy

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Methods

- BCS eligibility before and after NAC and clinical response to NAC were abstracted from the medical records by two trained surgeons and reviewed by a third investigator in instances of discrepancy

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Methods

- **Definitions**

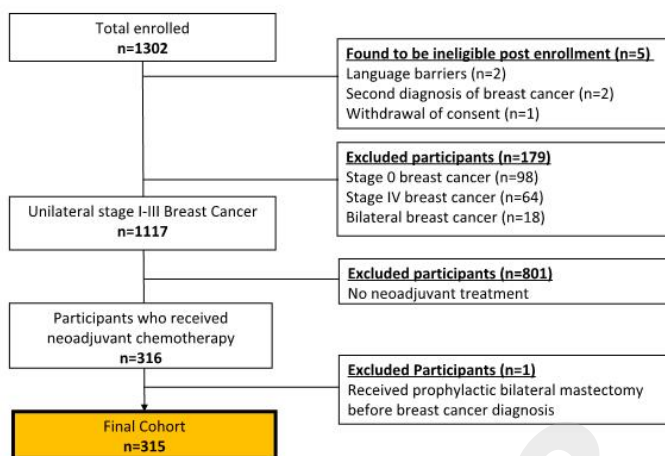
- BCS eligible Can proceed with BCS
- Borderline BCS possible but would potentially be a better candidate after NAC (e.g., BCS now would not result in optimal cosmetic outcome)
- BCS ineligible Cannot proceed with BCS without NAC or ever

- **Definition of clinical complete response (cCR) and pCR**

- cCR No palpable tumor in the breast (radiology not reviewed)
- pCR No tumor in the breast (with or without ductal carcinoma in situ) and absence of any tumor deposit more than 0.2mm in lymph nodes

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Study Participants



28% of women with unilateral stage I-III breast cancer received NAC

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Results: Patient Characteristics

	Characteristics	Number (N=315)	Percentage (%)
Age	Median (IQR)	36 yrs (32-38)	
Race/Ethnicity	Non Hispanic white	253	80
Clinical T stage	T1	36	11
	T2/T3	262	83
	T4	17	5
Clinical N stage	Node positive (N1-N3)	192	61
Clinical Subtypes	ER and or PR + / Her2 -	119	38
	Her2 positive	106	34
	Triple negative	90	29

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Results: Clinical and Pathological Response

Response to NAC		Number (n=315)	Percentage (%)
Clinical Response	Complete Response(cCR)*	212	67
Pathologic Response	pCR (ypT0/isN0) †	100	32

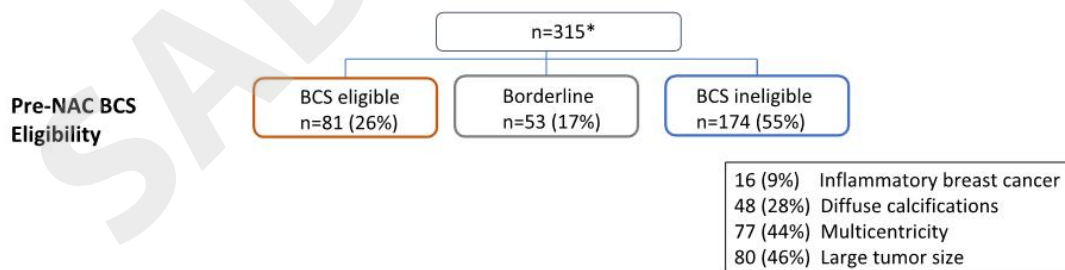
Pathologic response by clinical subtype	pCR number	Percentage of pCR (%)
ER and or PR + / Her2 – (n=119)	21	18
Her2 positive (n=106)	42	40
Triple negative (n=90)	37	41

*cCR was defined as no palpable tumor in the breast

† pCR was defined as no tumor in the breast (with or without ductal carcinoma in situ) and absence of any tumor deposit more than 0.2mm in lymph nodes

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

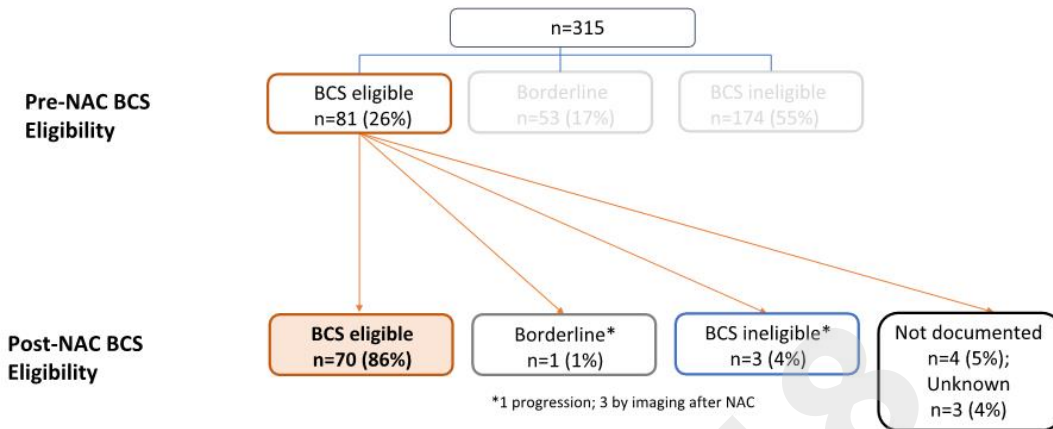
BCS eligibility pre-NAC



*Unknown for pre-NAC BCS eligibility n=7 (2%)

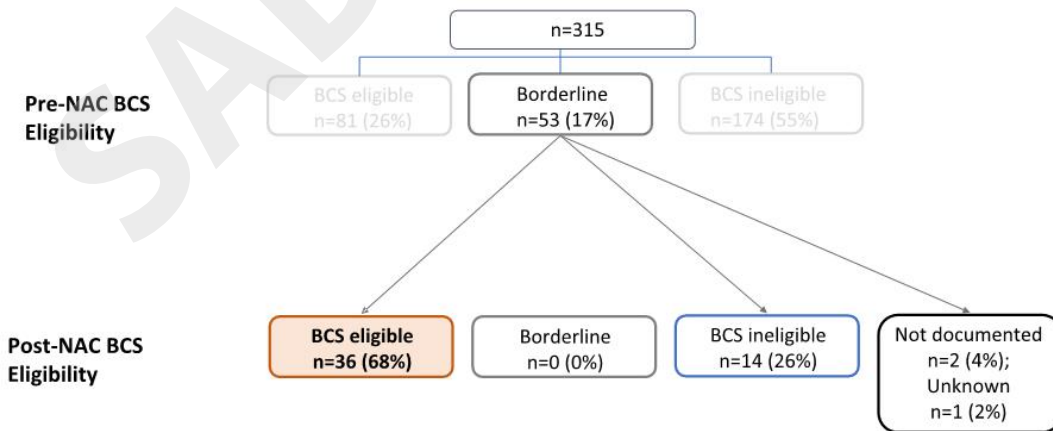
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

BCS eligibility pre- and post-NAC



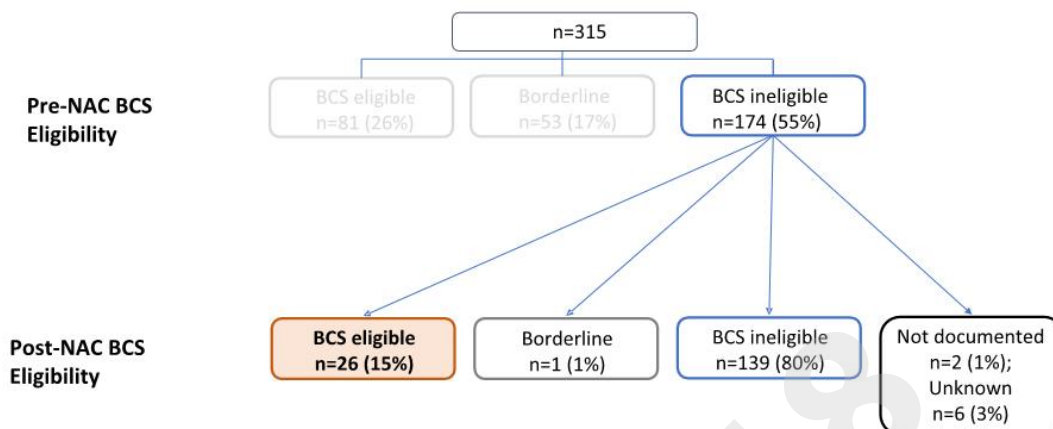
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

BCS eligibility pre- and post-NAC



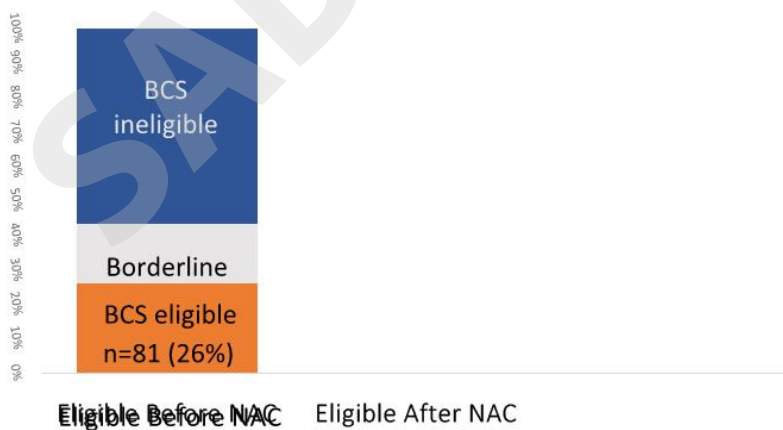
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

BCS eligibility pre- and post-NAC



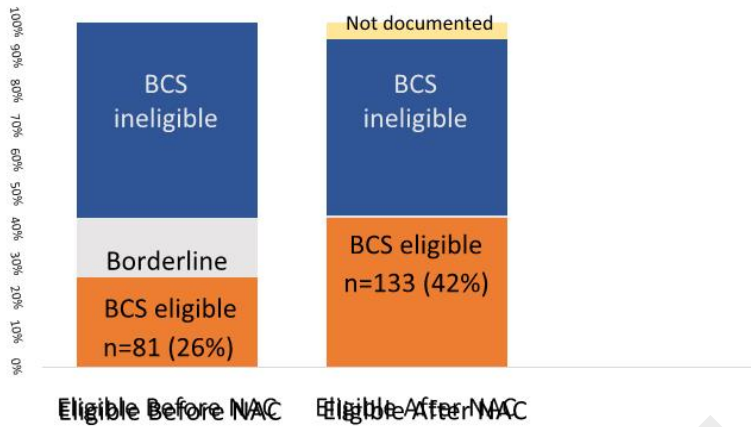
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Change in BCS eligibility after NAC



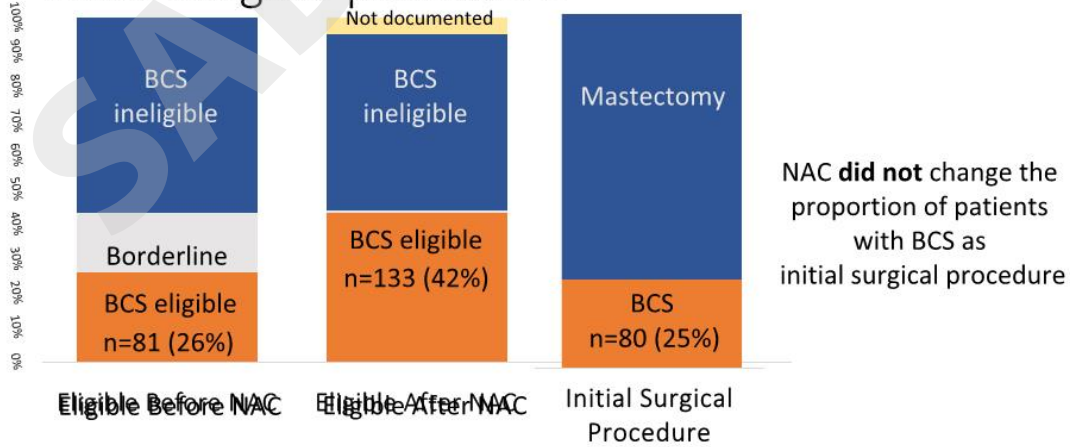
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Change in BCS eligibility after NAC



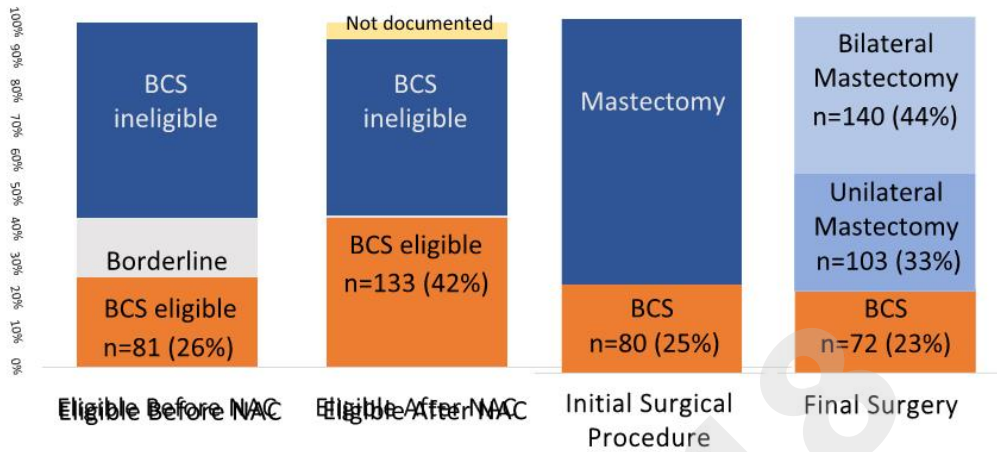
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Change in BCS eligibility after NAC and initial surgical procedure



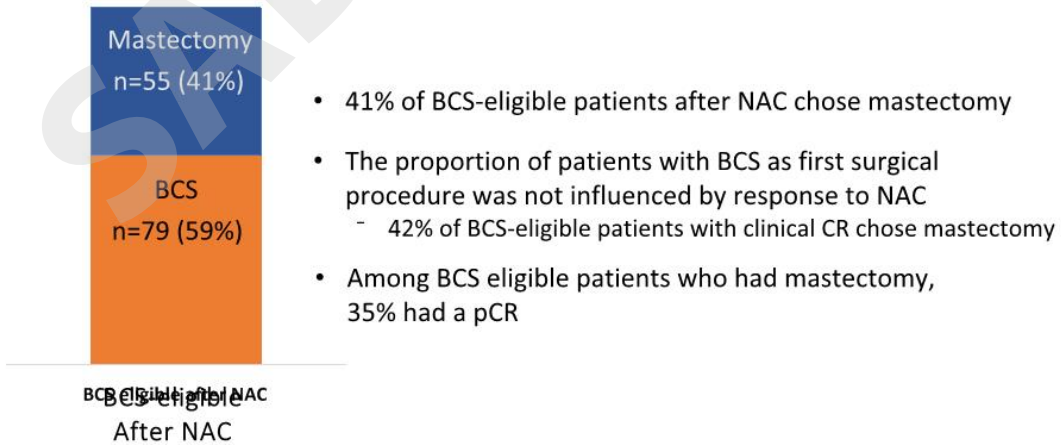
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Change in BCS eligibility after NAC and surgery



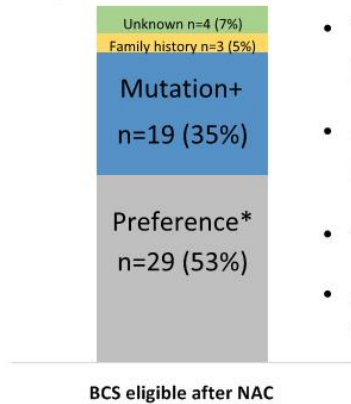
This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Initial surgical procedure among BCS-eligible patients after NAC (N=133)



This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Reasons for choosing mastectomy in BCS-eligible patients (N=55)

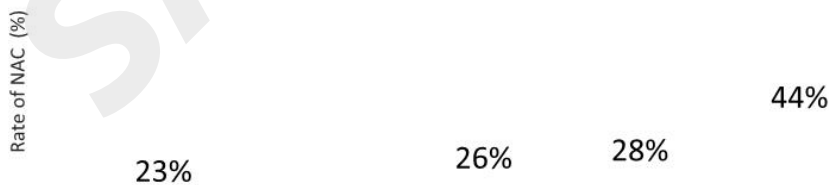


- The most common documented reason that BCS-eligible patients chose mastectomy was patient preference (53%)
- 40% chose mastectomy because of carrying a BRCA 1 or 2, or p53 mutation or having a strong family history
- 75% who chose mastectomy underwent bilateral mastectomy
- Among BCS-eligible patients with cCR and/or ultimately pCR who chose mastectomy, these reasons were similar

*Preference was defined as someone who chose mastectomy without having a mutation or strong family history

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

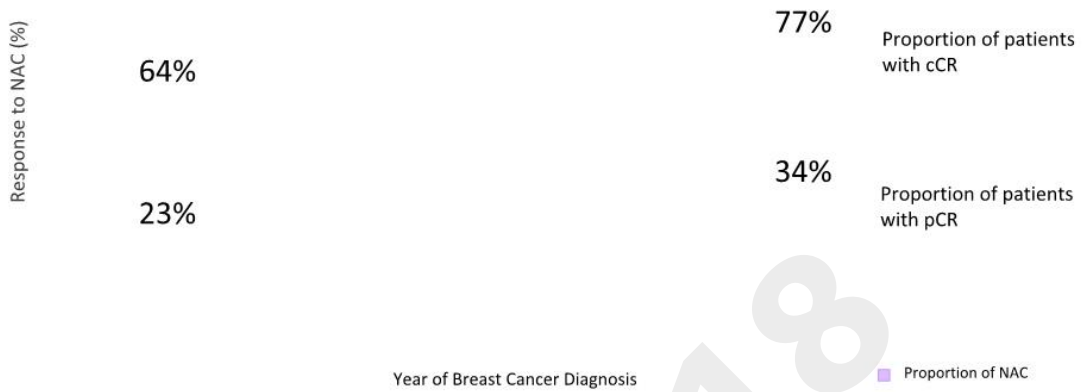
Exploratory analysis: NAC use over time in YWS



Year of Breast Cancer Diagnosis

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Exploratory analysis: NAC use and response over time in YWS



This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Exploratory analysis: NAC use and response, and BCS as first surgery over time



This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.harvard.edu for permission to reprint and/or distribute.

Conclusions and Implications

- NAC increased the proportion of young women with breast cancer who were eligible for BCS, yet 40% of eligible patients chose mastectomy regardless of response to NAC in a large multicenter cohort
 - Personal preference (without known high risk predisposition) was most common reason
- While rates of NAC have increased over time and response rates have improved, rate of BCS as first surgical procedure is not increasing
- Surgical decisions among young women with breast cancer appear driven by factors beyond the extent of disease and response to NAC
- Focused efforts to optimize surgical decision-making are needed

This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.

Acknowledgements

We would like to thank the participants in
Helping Ourselves Helping Others: The Young Women's Breast Cancer Study

We would also like to acknowledge all participating sites, study team members,
and the following organizations for supporting this research:



This presentation is the intellectual property of the author/presenter. Contact them at Hee_Kim@DFCI.Harvard.edu for permission to reprint and/or distribute.