

Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Baseline Patient, Tumor, and Treatment Characteristics

Characteristic	Patients, No. (%)		P Value ^a
	CF-WBI (n = 149)	HF-WBI (n = 138)	
Patient			
Age at diagnosis, y			
40-49	13 (9)	19 (14)	.55
50-59	55 (37)	46 (33)	
60-69	59 (40)	51 (37)	
≥70	22 (15)	22 (16)	
Race			
White non-Hispanic	116 (78)	99 (72)	.68
Hispanic	16 (11)	20 (15)	
Black non-Hispanic	15 (10)	17 (12)	
Asian non-Hispanic	2 (1)	2 (1)	
Menopausal status			
Premenopausal	9 (6)	13 (9)	.23
Perimenopausal	8 (5)	3 (2)	
Postmenopausal	132 (89)	122 (88)	
Bra cup size			
A	13 (9)	7 (5)	.53
B	31 (21)	34 (25)	
C	50 (34)	46 (33)	
D	40 (27)	35 (25)	
DD	12 (8)	16 (12)	
DDD	2 (1)	0	
EE	1 (1)	0	
BMI			
<24.48	35 (24)	37 (27)	.08
24.48 to <29.18	38 (26)	35 (25)	
29.18 to <33.64	30 (20)	40 (29)	
>33.64	46 (31)	26 (19)	
Physician-assessed cosmesis			
Excellent-good	135 (91)	131 (95)	.16
Fair-poor	14 (10)	7 (5)	
Tumor			
Invasive	110 (74)	114 (83)	.07
DCIS	39 (26)	24 (17)	
Grade			
1	40 (27)	34 (25)	.46
2	70 (47)	73 (53)	
3	39 (26)	30 (22)	
Unclassified ^b	0	1 (1)	
Margin status			
Negative, ≥2 mm	133 (89)	121 (88)	.67
Negative, <2 mm	16 (11)	17 (12)	
Quadrant			

Central	16 (11)	27 (20)	
Lower inner	9 (6)	7 (5)	
Lower outer	22 (15)	17 (12)	.28
Upper inner	22 (15)	15 (11)	
Upper outer	80 (54)	72 (52)	
Estrogen receptor status			
Positive ^d	130 (87)	118 (86)	
Negative	18 (12)	16 (12)	.39
Not tested	1 (1)	4 (3)	
Progesterone receptor status			
Positive ^d	112 (75)	102 (74)	
Negative	36 (24)	32 (23)	.42
Not tested	1 (1)	4 (3)	
Her2-neu status			
Positive ^d	12 (8)	11 (8)	
Negative	102 (69)	103 (75)	.43
Not tested	35 (24)	24 (17)	
Pathologic stage of invasive cancer without neoadjuvant therapy (n = 196) ^e			
pT1mic-pT1a	16 (17)	12 (12)	
pT1b	24 (26)	23 (23)	.44
pT1c	43 (46)	48 (47)	
pT2	11 (12)	19 (19)	
pN0	79 (84)	89 (87)	
pN1mic	14 (15)	6 (6)	.02
pN1a	1 (1)	7 (7)	
Clinical and pathologic stage of invasive cancer with neoadjuvant therapy (n = 28) ^e			
cT1c	2 (12)	2 (17)	.76
cT2	14 (88)	10 (84)	
cN0	13 (81)	11 (92)	.44
cN1a	3 (19)	1 (8)	
pT0	7 (44)	5 (42)	
pTis	1 (6)	2 (17)	
pT1a	2 (13)	0	.68
pT1b	0	0	
pT1c	4 (25)	3 (25)	
pT2	2 (13)	2 (17)	
pN0	16 (100)	12 (100)	NA
Treatment			
Chemotherapy			
None	106 (71)	96 (70)	
Neoadjuvant	16 (11)	12 (9)	.67
Adjuvant	27 (18)	30 (22)	
Treatment center location			
Houston area	141 (95)	132 (96)	
Banner MD Anderson	4 (3)	0	.16
Orlando Health	4 (3)	6 (4)	

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); CF, conventionally fractionated; DCIS, ductal carcinoma in situ; HF, hypofractionated; NA, not applicable; WBI, whole-breast irradiation.

^aFisher exact test used for race, estrogen receptor status, progesterone receptor status, and bra cup size; χ^2 test used for all other comparisons.

^bThis patient's cancer was diagnosed on core biopsy, but grade could not be assigned. There was no residual disease in the lumpectomy specimen.

^cBecause DCIS typically does not undergo pathologic staging of the axillary nodes, patients with DCIS are not included in the comparison of stage by randomization arm. In addition, staging is different for patients treated with primary surgery vs those treated with neoadjuvant chemotherapy.

^dIn positive estrogen and progesterone receptor findings, at least 1% of cells stained for estrogen and progesterone receptor, respectively; positive Her2-neu finding was defined as 3+ as conventionally reported by immunohistochemical analysis or gene amplification by fluorescence in situ hybridization.

eTable 2. Additional treatment characteristics							
		CF-WBI (n=149)			HF-WBI (n=138)		P*
		N	%		N	%	
Treatment characteristics							
	Treatment Location						0.16
	Houston-area	141	95		132	96	
	Banner MD Anderson	4	3		0	0	
	Orlando Health	4	3		6	4	
	Dmax Quartile (% of prescription dose)						0.34
	<106.4	32	22		40	29	
	106.4 - <107.0	40	27		32	23	
	107.0 - 107.7	35	24		36	26	
	>107.7	42	28		30	22	
	V90 Quartile (cc)						0.62
	<909.7	37	25		35	25	
	909.7 - <1389.8	36	24		36	26	
	1389.8 - <1763	42	28		30	22	
	≥1763	34	23		37	27	
	V105 Quartile (cc)						0.28
	<6.3	30	20		40	29	
	6.3 - <20.08	41	28		31	23	
	20.08 - <43.6	41	28		31	23	
	≥43.6	37	25		36	26	
	Central Axis Separation Quartile (cm)						0.96
	<21.09	38	26		34	25	
	21.09 - <23.2	40	27		34	25	
	23.2 - <25.64	35	24		35	25	
	≥25.64	36	24		35	25	
	% Dose Delivered with 18 MV Photons Quartile						0.30
	<17	44	30		28	20	
	17 - <46	34	23		40	29	
	46 - <75	36	24		36	26	
	>75	35	24		34	25	
Abbreviations: CF (conventionally fractionated), HF (hypofractionated), WBI (whole breast irradiation). *-Fisher's exact test used for treatment location. Chi-square test used for all other comparisons.							

eTable 3. Patient Responses to Individual FACT-B Items Contributing to Physical Well-Being													
		CF-WBI					HF-WBI					P*	
		0	1	2	3	4	0	1	2	3	4		
Baseline													
	Q1. I have a lack of energy	43	48	35	17	5	45	40	32	15	6	0.86	
	Q2. I have nausea	130	14	3	2	0	123	10	4	1	0	0.70	
	Q3. Because of my physical condition, I have trouble meeting the needs of my family	104	24	16	3	2	101	23	8	4	2	0.54	
	Q4. I have pain	86	45	12	3	3	80	42	11	2	3	0.92	
	Q5. I am bothered by side effects of treatment	106	24	10	4	4	102	21	10	0	2	0.22	
	Q6. I feel ill	129	13	4	2	0	120	14	3	1	0	0.79	
	Q7. I am forced to spend time in bed	126	13	5	5	0	114	9	11	3	1	0.46	
Six months													
	Q1. I have a lack of energy	34	52	34	15	5	54	44	21	7	2	<0.001	
	Q2. I have nausea	128	8	2	2	0	118	7	2	1	0	0.73	
	Q3. Because of my physical condition, I have trouble meeting the needs of my family	113	14	8	3	1	118	6	3	1	0	0.01	
	Q4. I have pain	74	46	14	5	1	71	40	10	5	1	0.69	
	Q5. I am bothered by side effects of treatment	99	20	14	4	3	94	23	4	3	4	0.50	
	Q6. I feel ill	128	7	3	1	1	118	5	2	2	0	0.69	
	Q7. I am forced to spend time in bed	121	14	2	2	1	115	7	2	3	1	0.87	
Abbreviations: CF (conventionally fractionated), HF (hypofractionated), WBI (whole breast irradiation)													
*P-value from Cochran-Armitage test for trend. A score 0 indicates "Not at all," 1 indicates "1 little bit," 2 indicates "Somewhat," 3 indicates "Quite a bit," and 4 indicates "Very much."													

eTable 4. Predictors of Patient-Reported Lack of Energy and Trouble Meeting Family Needs at 6-Month Follow Up Visit									
		Q1. Lack of energy				Q3. Trouble meeting family needs			
		N	OR	95% CI	P	N	OR	95% CI	P
Randomization arm									
	CF-WBI	140	1	.	.	139	1	.	.
	HF-WBI	128	0.39	0.24-0.63	<0.001	128	0.34	0.16-0.75	0.007
Chemotherapy									
	None	185	1	.	.	184	1	.	.
	Neoadjuvant	27	1.21	0.50-2.89	0.68	27	1.34	0.41-4.30	0.63
	Adjuvant	56	1.87	0.99-3.54	0.055	56	2.78	1.26-6.15	0.01
Age (years)									
	40 to 49	27	1	.	.				
	50 to 59	97	1.10	0.47-2.55	0.83				
	60 to 69	104	1.92	0.82-4.50	0.13				
	70 and older	40	2.39	0.91-6.27	0.08				
Body mass index									
	< 24.5	68	1	.	.				
	24.5 - 29.1	70	0.88	0.43-1.78	0.72				
	29.2 - 33.6	66	1.60	0.72-3.53	0.25				
	> 33.6	64	1.02	0.43-2.39	0.97				
ER status									
	Positive	31	1	.	.				
	Negative	232	0.45	0.19-1.03	0.06				
	Unknown	5	2.09	0.42-10.50	0.37				
Tumor behavior									
	Invasive	209	1	.	.				
	DCIS	59	0.56	0.30-1.05	0.07				
CAX separation									
	< 21.1 cm	69	1	.	.				
	21.1 - 23.1 cm	70	0.79	0.39-1.60	0.51				
	23.2 - 25.6 cm	67	1.63	0.75-3.53	0.21				

	>25.6 cm	62	1.43	0.59-3.43	0.43					
Dmax										
	< 6.4%	68	1	.	.					
	6.4%-7.0%	69	1.21	0.64-2.30	0.56					
	7.0%-7.7%	64	0.64	0.33-1.26	0.20					
	> 7.7%	67	0.87	0.46-1.66	0.67					
268 patients completed Q1 of the FACT-B at six months and are included in the Q1 model; 267 patients completed Q3 of the FACT-B at six months and are included in the Q3 model. For the Q3 model, the following covariables did not meet prespecified criteria for inclusion in the final model: age, body mass index, ER status, tumor behavior, CAX separation, and Dmax.										
<p>An OR < 1 indicates that a more favorable quality of life score; An OR>1 indicates a worse quality of life score. In a sensitivity analysis, adding the format used for completing the FACT-B (electronic vs. paper) was not predictive of outcome for the Q1 model (P=0.57) or the Q3 model (P=0.25). For the Q1 model, a further sensitivity analysis was conducted in which ER status was removed from the model and replaced with a variable indicating whether or not the patient was actually taking endocrine therapy at the time of assessment. This variable was not significantly associated with outcome, OR 1.55, 95% CI 0.86-2.81; P=0.15 (not taking endocrine therapy is the referent group in this analysis).</p> <p>Abbreviations: CAX (central axis), CF (conventionally fractionated), CI (confidence interval), DCIS (ductal carcinoma in situ), ER (estrogen receptor), HF (hypofractionated), OR (odds ratio), WBI (whole breast irradiation)</p>										