

Updates in Breast Cancer Management: Targeted Therapies

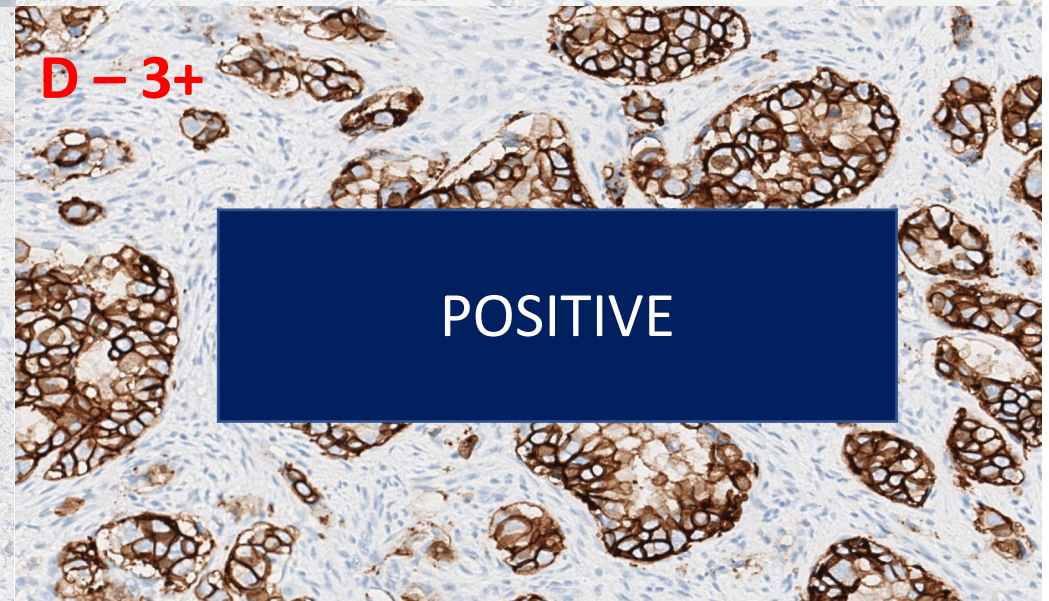
Melissa Yacur, MD
Inova Schar Cancer Institute
August 5, 2023

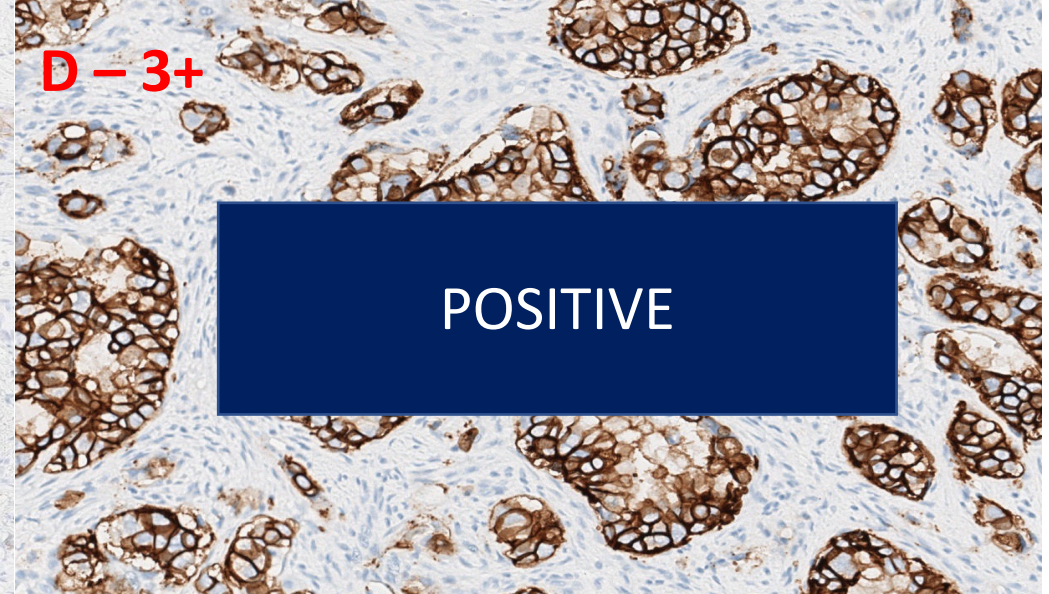
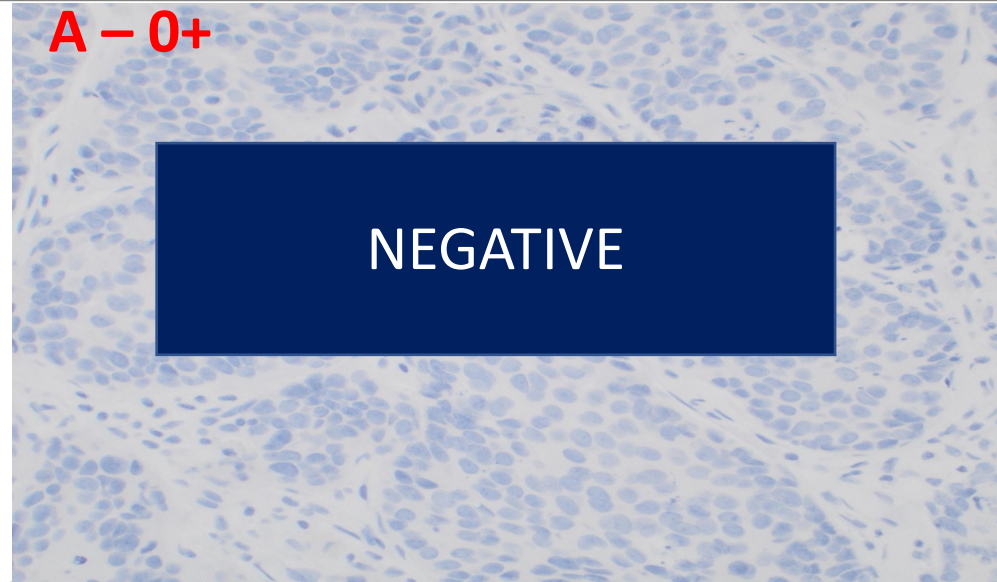
Objectives

- Trastuzumab-deruxtecan for Her-2 Low Breast cancer
- Adjuvant CDK 4/6 inhibitors for hormone-positive (HR+)/Her-2 negative tumors
- Targeting ESR1 mutations in metastatic HR+ breast cancer



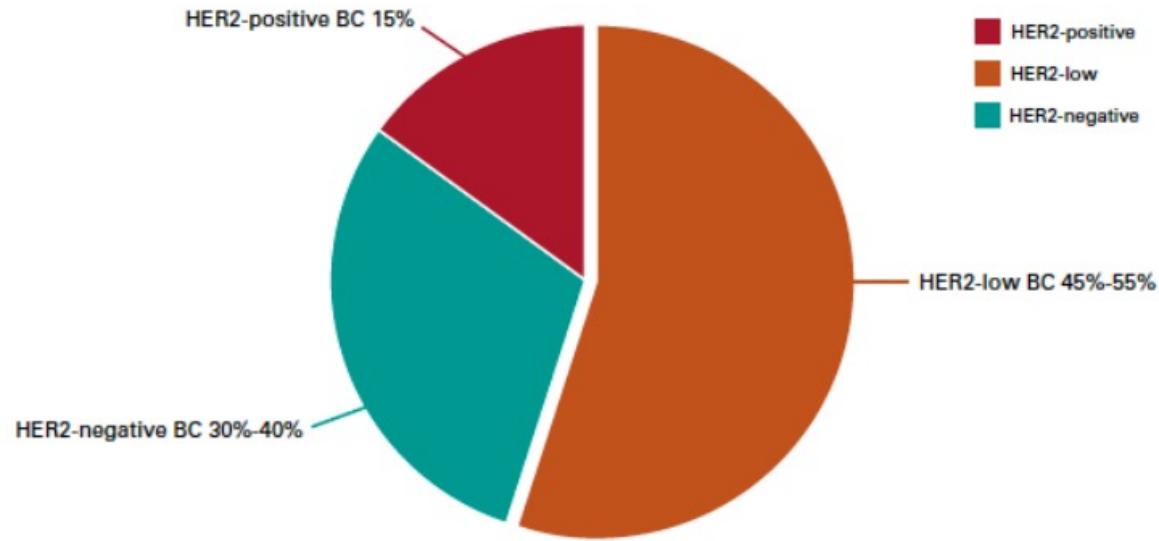
Her-2 Low



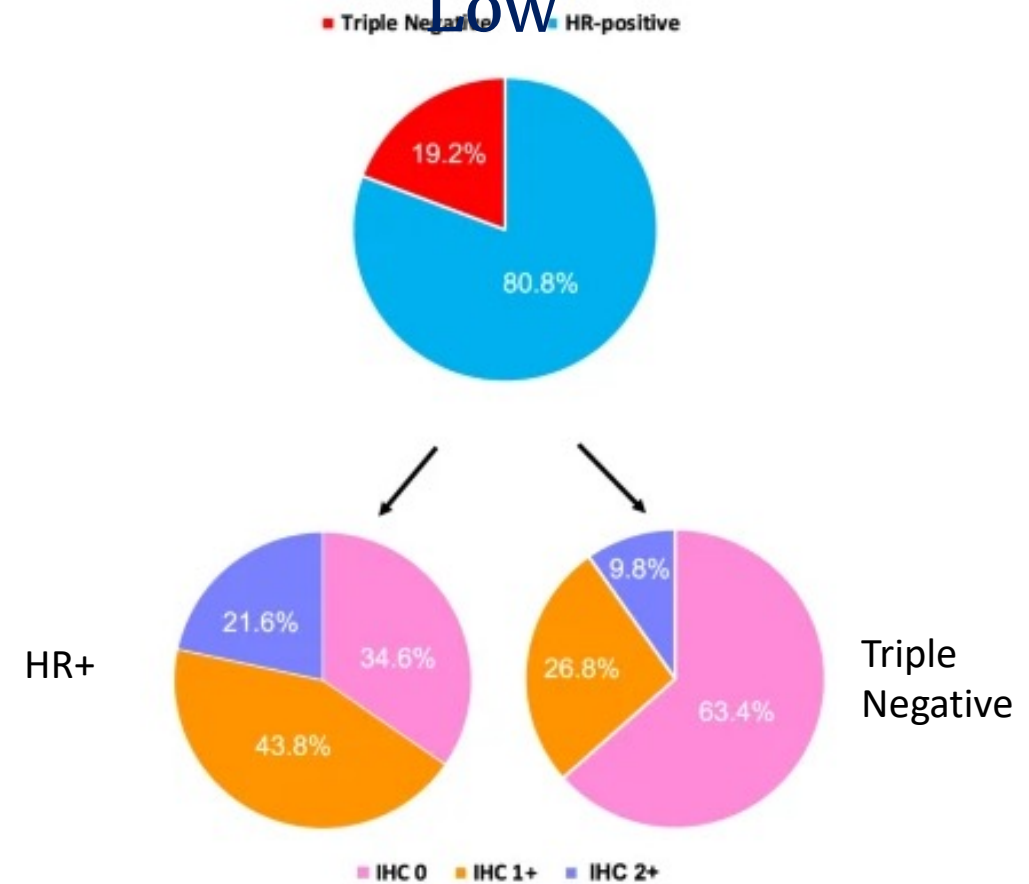


Prevalence of Her-2 Low

All Breast Cancers



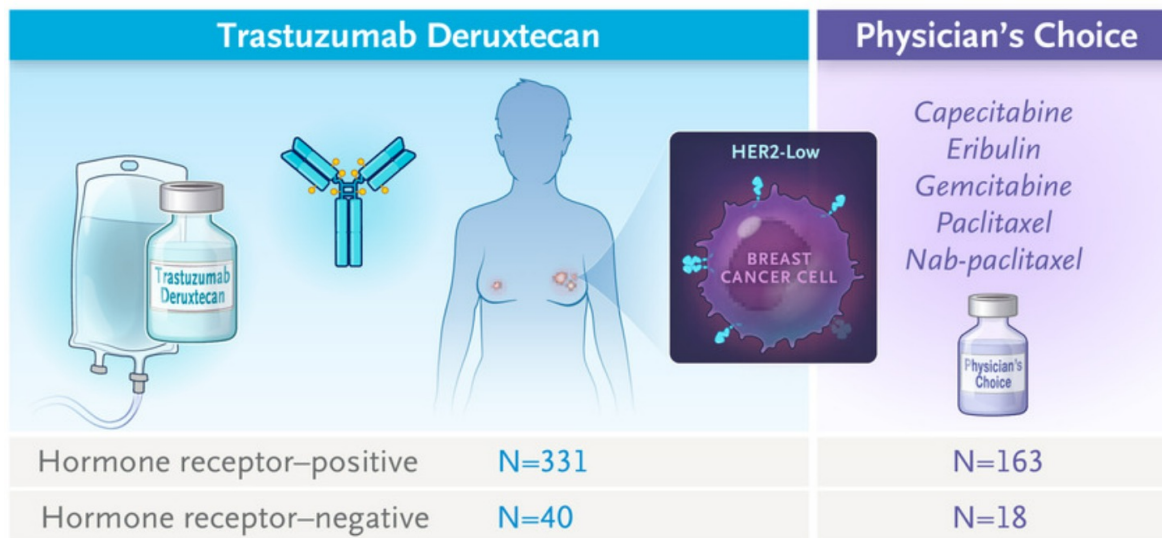
Her-2 Zero and Low



What Does This Mean For Patients?

- Her-2 low tumors are emerging as a distinct subgroup in terms of tumor biology, response to therapy, and prognosis
- No standard of care currently to incorporate Her-2 directed therapy in the local/locally advanced setting for Her-2 low
- With recent data, advanced disease can be targeted

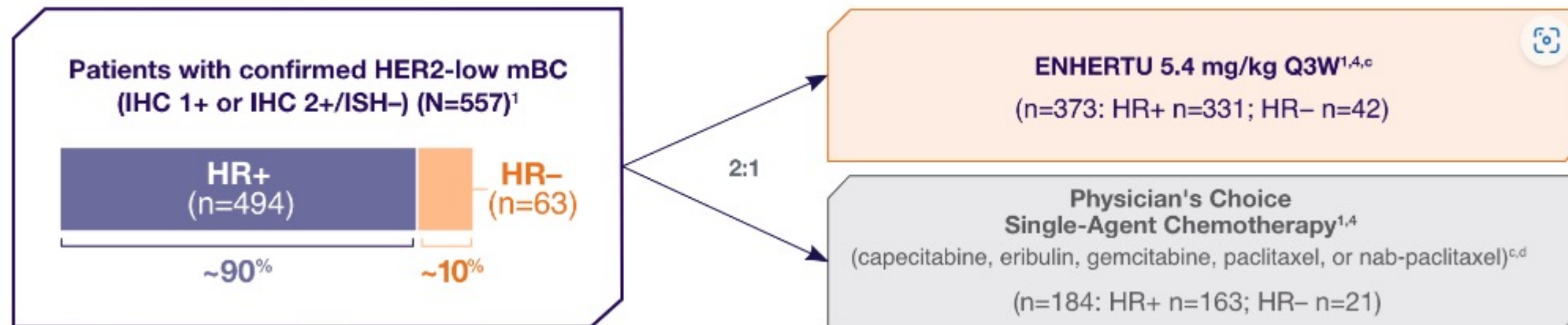
Destiny-Breast04



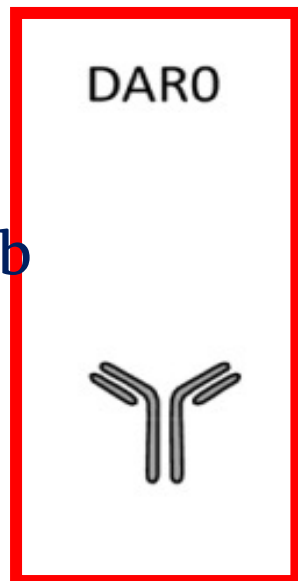
Eligibility Criteria:

- Her-2 low (IHC 1+ or IHC 2+/ISH -)
- At least one prior line of chemo for metastatic disease or disease recurrence 6 months or less after adjuvant therapy
- At least one line of endocrine therapy if metastatic HR+
- Could be HR+ or HR -

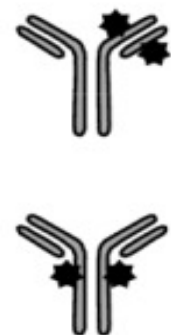
Destiny-04 Trial Design



Trastuzumab



DAR2



DAR4



DAR6



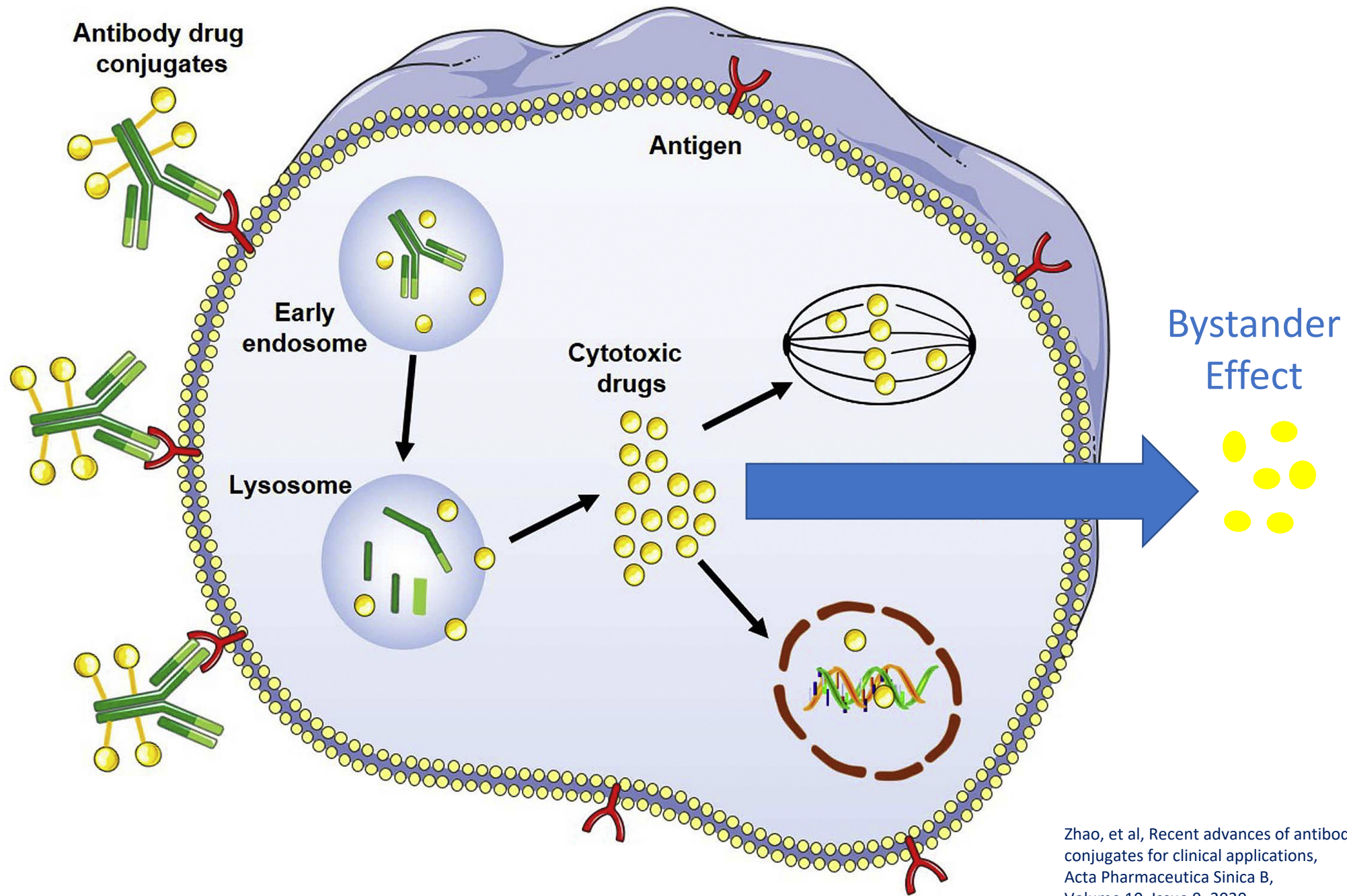
DAR8



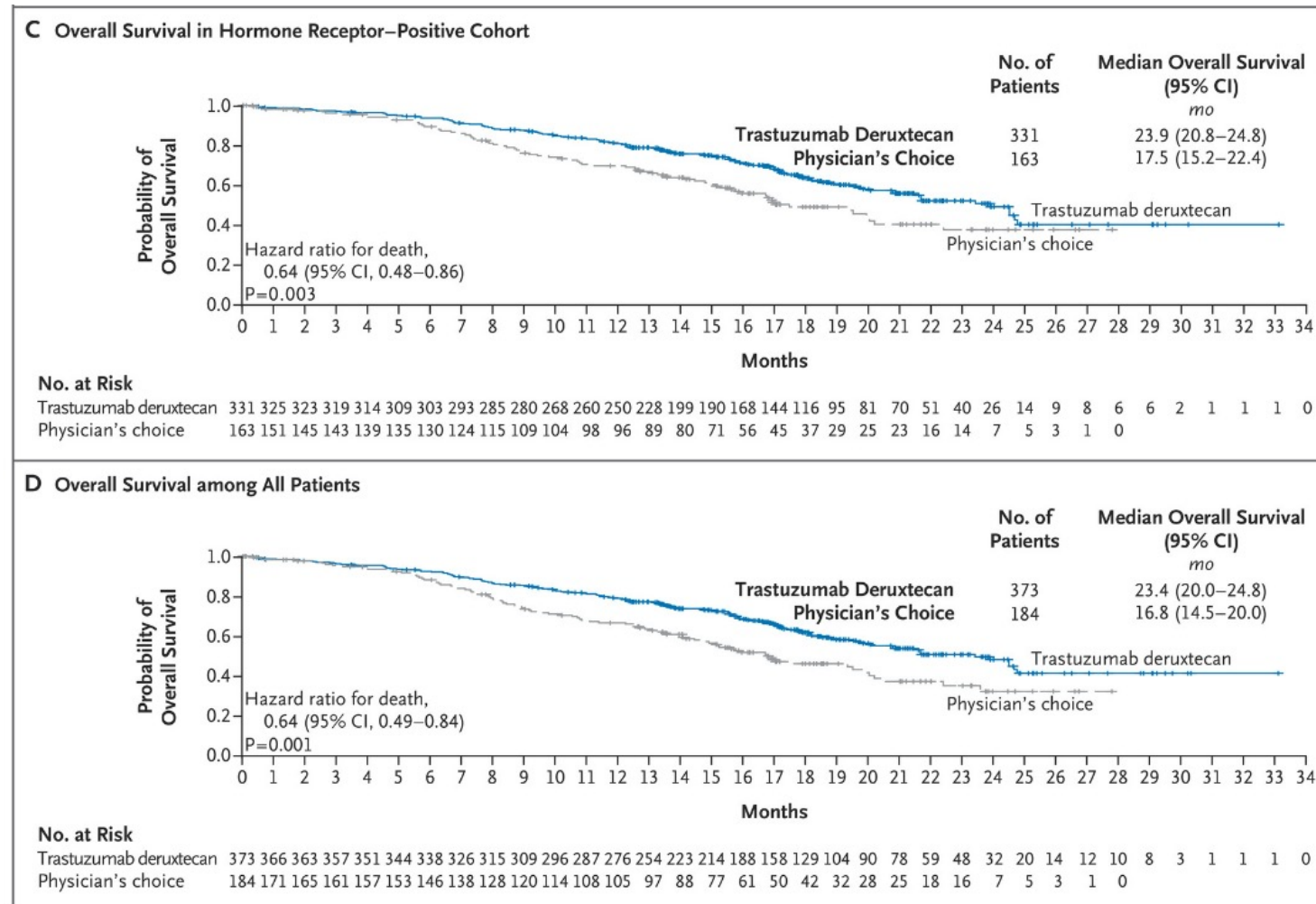
Trastuzumab
deruxtecan

Clearance
Efficacy in vitro
Toxicity

Drug-to-Antibody Ratio



Destiny-Breast04

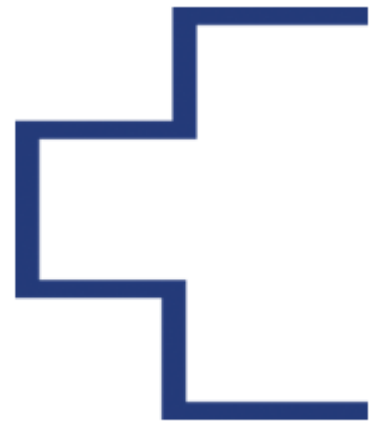


P=0.003

P=0.001

Summary

- Her-2 low (IHC 1+ or 2+) is an exciting new target in breast cancer
- Current data supports use of trastuzumab-deruxtecan in the advanced setting after at least one line of prior therapy or rapid recurrence
- Bystander effect of this drug likely plays a role in its effectiveness



Adjuvant CDK 4/6 inhibitors

Breast carcinoma TNM anatomic stage group AJCC UICC 8th edition

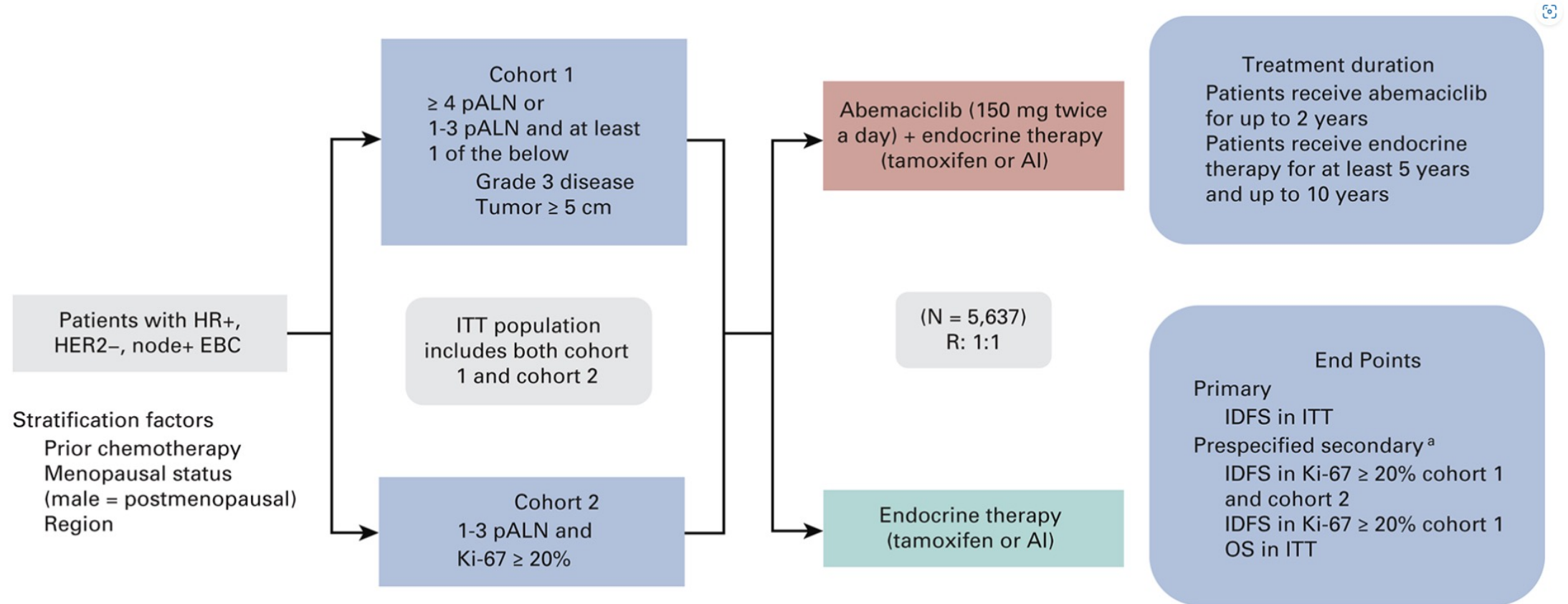
When T is...	And N is...	And M is...	Then the stage group is...
Tis	N0	M0	0
T1	N0	M0	IA
T0	N1mi	M0	IB
T1	N1mi	M0	IB
T0	N1	M0	IIA
T1	N1	M0	IIA
T2	N0	M0	IIA
T2	N1	M0	IIB
T3	N0	M0	IIB
T0	N2	M0	IIIA
T1	N2	M0	IIIA
T2	N2	M0	IIIA
T3	N1	M0	IIIA
T3	N2	M0	IIIA
T4	N0	M0	IIIB
T4	N1	M0	IIIB
T4	N2	M0	IIIB
Any T	N3	M0	IIIC
Any T	Any N	M1	IV

- The anatomic stage group table should only be used in global regions where biomarker tests are not routinely available.
- Cancer registries in the US must use the prognostic stage group table for case reporting.

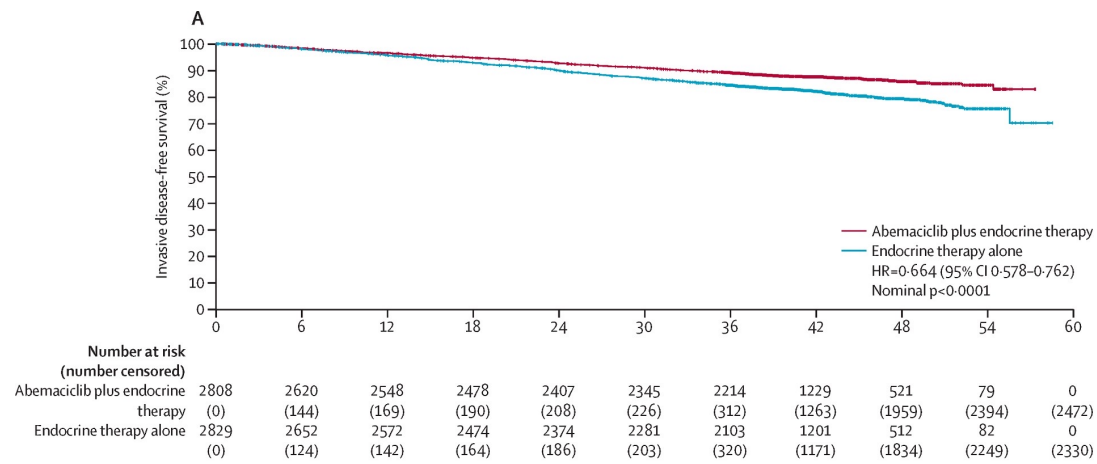
TNM: tumor, node, metastasis; AJCC: American Joint Committee on Cancer; UICC: Union for International Cancer Control.

Used with permission of the American College of Surgeons, Chicago, Illinois. The original source for this information is the AJCC Cancer Staging Manual, Eighth Edition (2017) published by Springer International Publishing.

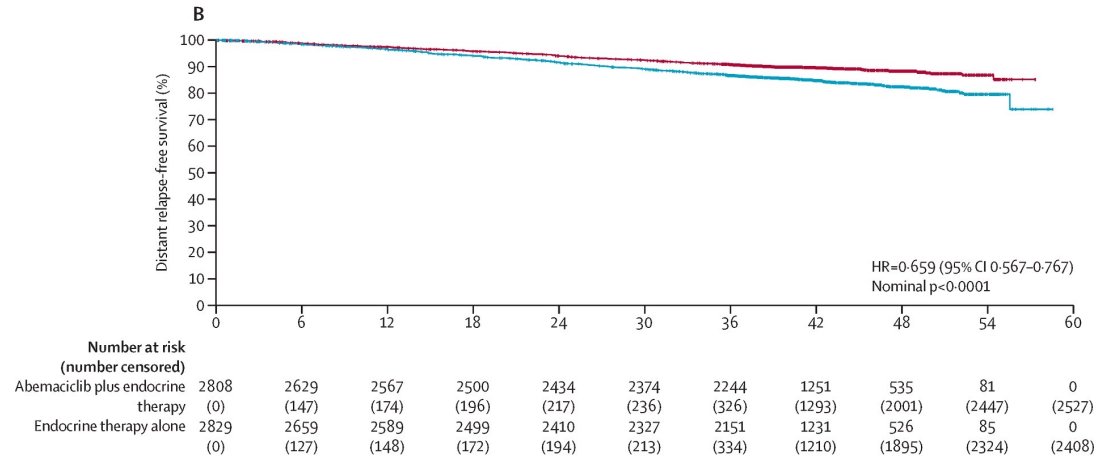
MonarchE -- abemaciclib



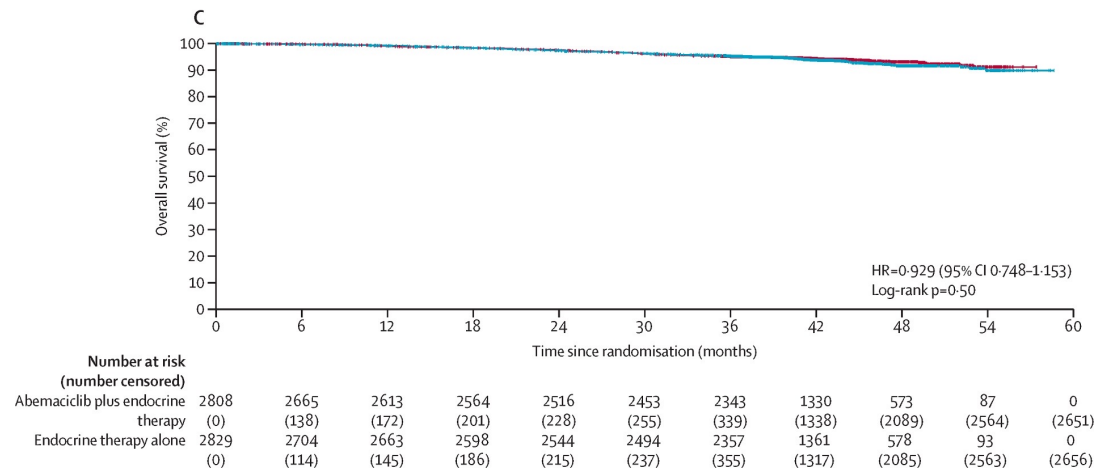
Johnston SRD, Harbeck N, Hegg R, et al. Abemaciclib combined with endocrine therapy for the adjuvant treatment of HR+, HER2-, node-positive, high-risk, early breast cancer (monarchE). *J Clin Oncol*. 2020;38(34):3987-3998.



iDFS in ITT
HR 0.66
p=<0.0001

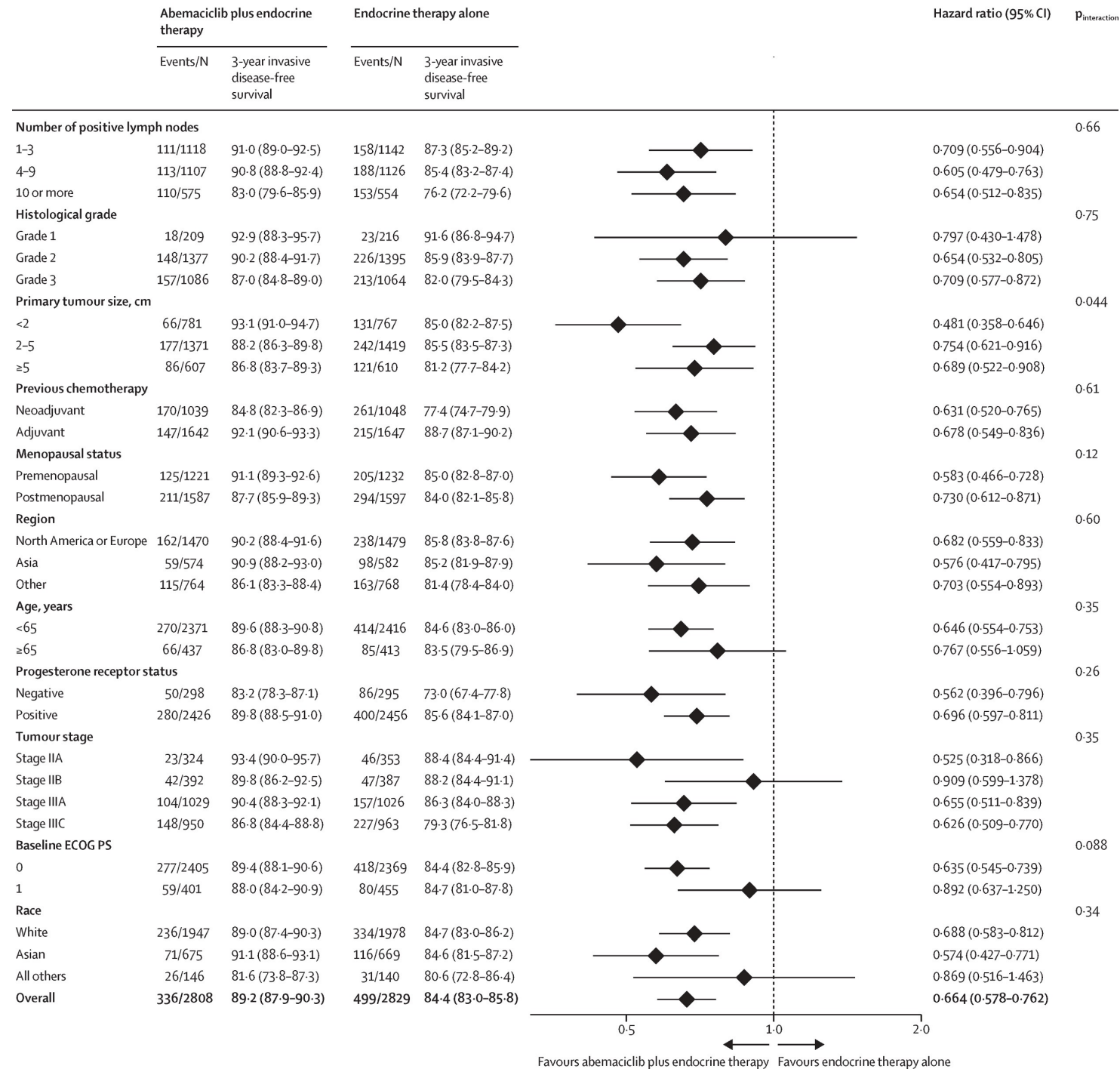


Distant relapse-free survival in ITT
HR 0.66
p=<0.0001



OS
HR 0.93

A



Adjuvant Ribociclib -- NATALEE

Key Inclusion Criteria

- Pre- or post-menopausal HR+/Her-2 neg
- Anatomic Stage IIA (N0 + high risk features or 1-3 LN+)
- High risk features defined as G2 with Ki-67 >20%/high genomic risk or G3
- Stage IIB or III

Key Exclusion Criteria:

- Prior CDK 4/6 inhibitor
- Uncontrolled heart disease or cardiac repolarization abnormality

Primary End-Point:

- Invasive disease-free survival

Secondary End-Points:

- Distant disease-free survival
- Overall survival

Randomized 1:1 ribociclib (**400 mg/day**, 21 days on, 7 days off) + ET v ET alone for 3 years

NATALEE Patient Characteristics

	Ribo + ET	ET
Age, median	52	52
Menopausal Status		
Men/Pre	1126 (44%)	1132 (44%)
Post	1423 (56%)	1420 (56%)
Anatomic Stage		
IIA	479 (19%)	521 (20%)
IIB	532 (21%)	513 (20%)
III	1528 (60%)	1512 (59%)
Prior ET		
Yes	72%	71%
Prior Chemotherapy		
Yes	88%	88%

NATALEE Results

	Ribo + ET	ET
3-year iDFS %	90.4	87.1

Median follow-up: 27.7 months

HR: 0.75

p=0.0014

Absolute iDFS benefit is 3.3%

	Ribo + ET	ET
3-year Distant DFS %	90.8	88.6

HR: 0.74

p=0.0017

Absolute DDFS benefit is 2.2%

Survival/subgroup analysis data still immature

Adjuvant Palbociclib -- PALLAS

Key Inclusion Criteria

- Pre- or post-menopausal HR+/Her-2 neg
- Stage II-III
- Stage IIA capped at N=1000

Key Exclusion Criteria:

- Prior CDK 4/6 inhibitor

Primary End-Point:

- Invasive disease-free survival

Secondary End-Points:

- Distant disease-free survival
- Locoregional recurrence-free survival
- Overall survival

Randomized 1:1 palbociclib (125 mg/day, 21 days on, 7 days off) + ET v ET alone for 2 years

PALLAS Patient Characteristics – Stage IIA group

	Palbo + ET	ET
Age, median	55	53
Menopausal Status		
Pre	194 (45%)	216 (46)
Post	306 (54%)	288 (53)
Prior Chemotherapy		
Yes	56%	55%

PALLAS Results

Median follow-up: 43 months

Stage IIA	Palbo + ET	ET
4-year iDFS %	92.9	92.1

HR: 0.75
p=0.23

Stage IIB/III	Palbo + ET	ET
4-year iDFS %	85.3	83.6

HR: 0.91
p=0.24

No benefit to adding adjuvant Palbociclib for 2 years was seen, regardless of stage

Comparison between Adjuvant CDK 4/6i Trials

	MonarchE	NATALEE	PALLAS
Drug	Abemaciclib	Ribociclib	Palbociclib
Duration	2 years	3 years	2 years
Eligibility			
Lower Risk	1-3 +LNs with: ->5 cm -G3 -Ki-67 >=20%	Stage IIA: -N1 -N0 with: • G2 + high Ki-67, high risk genomics, • G3	Stage IIA
Higher Risk	>=4 LN+	Stage IIB/IIIA	Stage IIB/IIIA

Comparison between Adjuvant CDK 4/6 Trials – Results

	MonarchE	NATALEE	PALLAS
iDFS – Intervention	85.8%	90.4%	IIA: 92.9% IIB/IIIa: 85.3%
iDFS – Control	79.4%	87.1%	IIA: 92.1% IIB/IIIa: 83.6%
iDFS HR	0.67%	0.75%	0.96

Summary

- Adjuvant CDK 4/6 inhibitors can provide an iDFS benefit for certain patients
- Currently, only abemaciclib is approved by the FDA for high-risk patients
- Overall survival data remains immature



ESR1

EMERALD

- Phase III trial of elacestrant v. standard of care therapy
- HR+/Her-2 advanced/metastatic, post-menopausal women or men
- Standard of care therapy included anastrozole, letrozole, exemestane, or fulvestrant monotherapy
- Progression after first- or second-line endocrine therapy (must include CDK4/6 + ET)
- Allowed one chemotherapy regimen in advanced/metastatic setting
- With or without ESR1 mutation

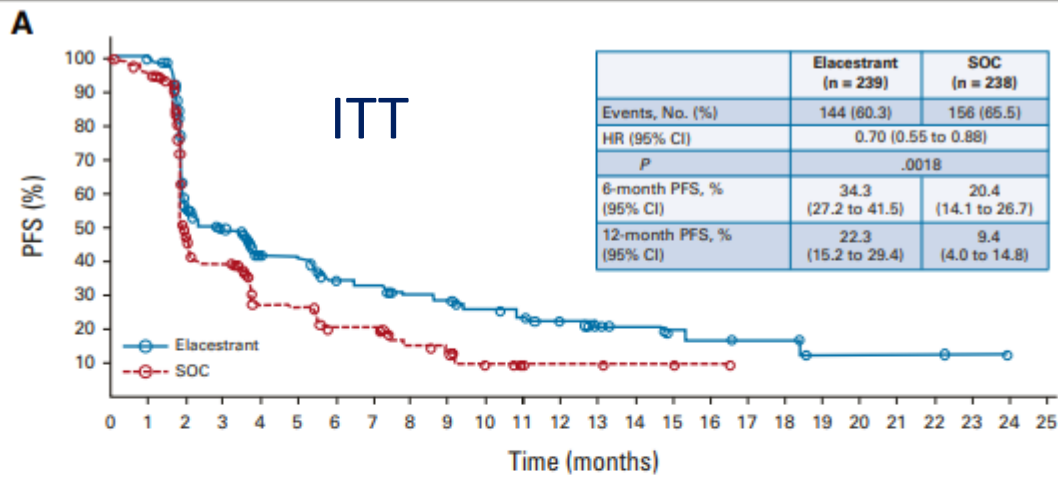
EMERALD – Patient Characteristics

Parameter	Elacestrant		SOC					
			Total		Fulvestrant		AI	
	All (n = 239)	<i>ESR1</i> Mutation (n = 115)	All (n = 238)	<i>ESR1</i> Mutation (n = 113)	All (n = 165)	<i>ESR1</i> Mutation (n = 83)	All (n = 73)	<i>ESR1</i> Mutation (n = 30)
Median age, years (range)	63 (24-89)	64 (28-89)	64 (32-83)	63 (32-83)	63 (32-83)	62 (32-83)	67 (44-83)	68 (44-83)
Female, n (%)	233 (97.5)	115 (100)	237 (99.6)	113 (100)	164 (99.4)	83 (100)	73 (100)	30 (100)
Race or ethnicity, n (%)								
White	168 (88.4)	84 (89.4)	170 (87.6)	80 (87.0)	113 (86.9)	56 (84.8)	57 (89.1)	24 (92.3)
Asian	16 (8.4)	5 (5.3)	16 (8.2)	8 (8.7)	14 (10.8)	8 (12.1)	2 (3.1)	0
Black or African American	5 (2.6)	4 (4.3)	7 (3.6)	4 (4.3)	3 (2.3)	2 (3.0)	4 (6.3)	2 (7.7)
Other race	1 (0.5)	1 (1.1)	1 (0.5)	0	0	0	1 (1.6)	0
Hispanic	19 (7.9)	10 (8.7)	18 (7.6)	10 (8.8)	10 (6.1)	7 (8.4)	8 (11.0)	3 (10.0)
ECOG performance status 0, n (%)	143 (59.8)	67 (58.3)	135 (56.7)	62 (54.9)	91 (55.2)	46 (55.4)	44 (60.3)	16 (53.3)
Visceral metastasis ^a , n (%)	163 (68.2)	81 (70.4)	169 (71)	84 (74.3)	117 (70.9)	60 (72.3)	52 (71.2)	24 (80.0)
Prior adjuvant therapy, n (%)	158 (66.1)	62 (53.9)	141 (59.2)	65 (57.5)	90 (54.5)	43 (51.8)	51 (69.9)	22 (73.3)
Prior CDK4/6 inhibitor, n (%)	239 (100)	115 (100)	238 (100)	113 (100)	165 (100)	83 (100)	73 (100)	30 (100)
No. of prior lines of endocrine therapy in the advanced or metastatic setting, n (%)								
1	129 (54.0)	73 (63.5)	141 (59.2)	69 (61.1)	120 (72.7)	64 (77.1)	21 (28.8)	5 (16.7)
2	110 (46.0)	42 (36.5)	97 (40.8)	44 (38.9)	45 (27.3)	19 (22.9)	52 (71.2)	25 (83.3)

EMERALD – Patient Characteristics

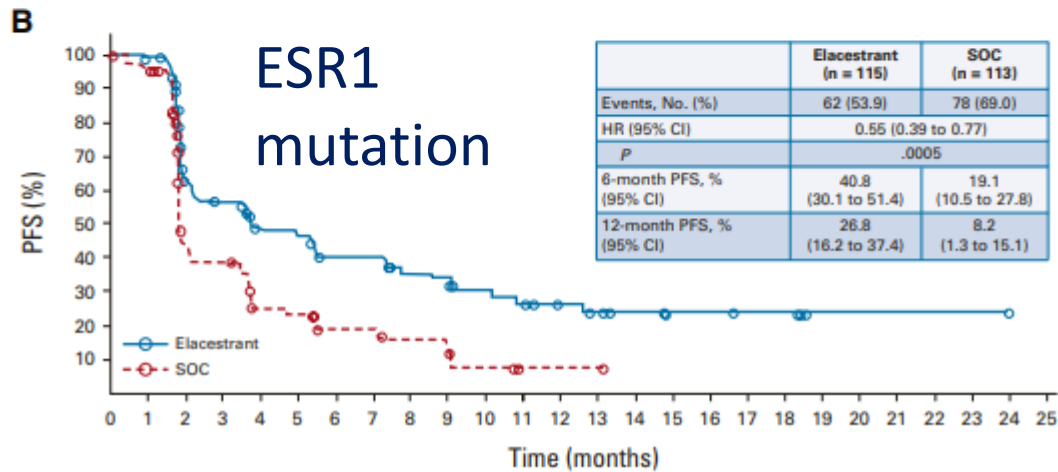
No. of prior lines of endocrine therapy in the advanced or metastatic setting, n (%)								
1	129 (54.0)	73 (63.5)	141 (59.2)	69 (61.1)	120 (72.7)	64 (77.1)	21 (28.8)	5 (16.7)
2	110 (46.0)	42 (36.5)	97 (40.8)	44 (38.9)	45 (27.3)	19 (22.9)	52 (71.2)	25 (83.3)
No. of prior lines of chemotherapy in the advanced or metastatic setting, n (%)								
0	191 (79.9)	89 (77.4)	180 (75.6)	81 (71.7)	132 (80.0)	64 (77.1)	48 (65.8)	17 (56.7)
1	48 (20.1)	26 (22.6)	58 (24.4)	32 (28.3)	33 (20.0)	19 (22.9)	25 (34.2)	13 (43.3)
Prior therapies for advanced or metastatic disease, n (%)								
Any prior endocrine therapy ^b	232 (97.1)	112 (97.4)	233 (97.9)	109 (96.5)	161 (97.6)	79 (95.2)	72 (98.6)	30 (100.0)
Fulvestrant	70 (29.3)	27 (23.5)	75 (31.5)	28 (24.8)	6 (3.6)	1 (1.2)	69 (94.5)	27 (90.0)
AI	193 (80.8)	101 (87.8)	193 (81.1)	96 (85.0)	159 (96.4)	78 (94.0)	34 (46.6)	18 (60.0)
Tamoxifen	19 (7.9)	9 (7.8)	15 (6.3)	9 (8.0)	10 (6.1)	6 (7.2)	5 (6.8)	3 (10.0)
mTOR inhibitor	10 (4.2)	6 (5.2)	6 (2.5)	3 (2.7)	5 (3.0)	2 (2.4)	1 (1.4)	1 (3.3)
PI3K inhibitor	3 (1.3)	1 (0.9)	1 (0.4)	0	1 (0.6)	0	0	0

PFS

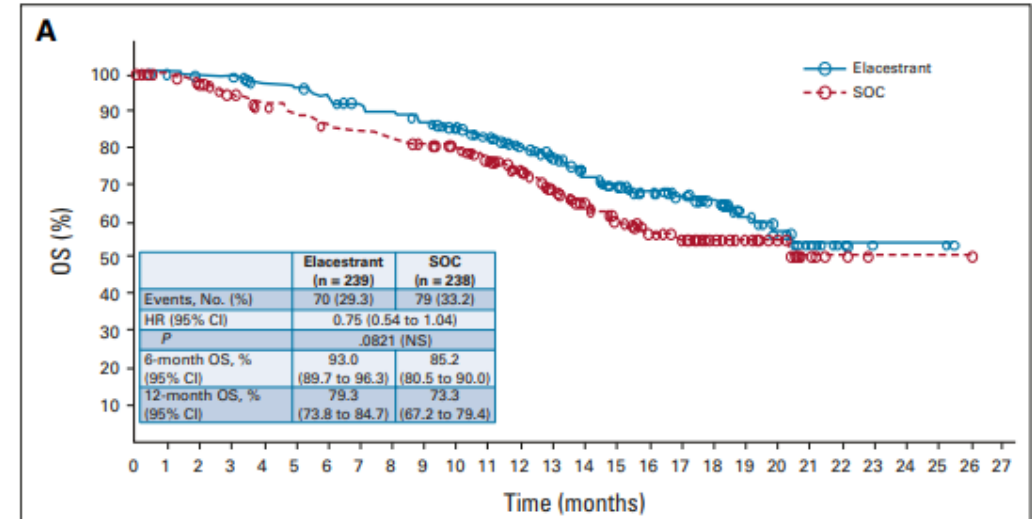


No. at risk:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Elacestrant	239	223	106	89	60	57	42	40	34	33	27	24	19	13	11	8	7	6	6	2	2	2	2	1	0
SOC	238	206	84	68	39	38	25	25	16	15	7	4	3	3	2	2	1	0							

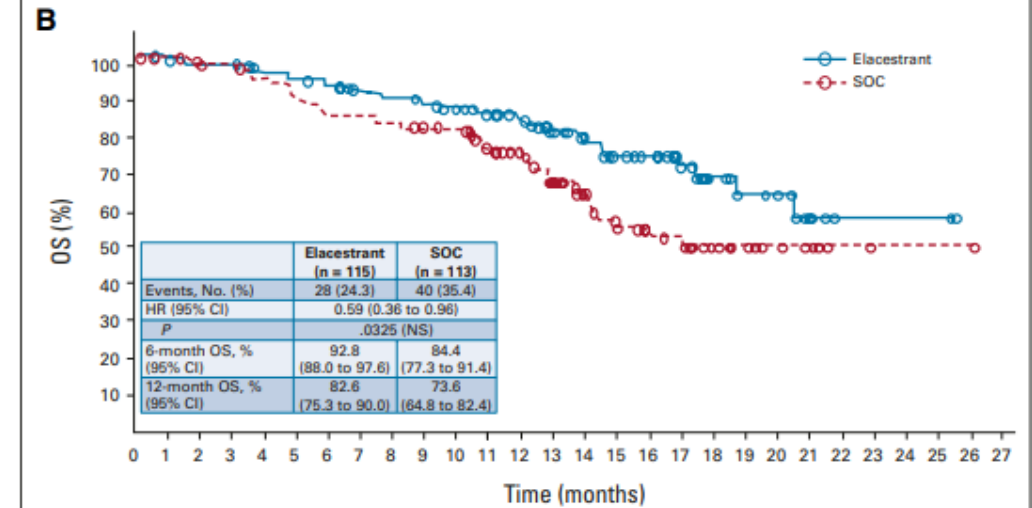


OS



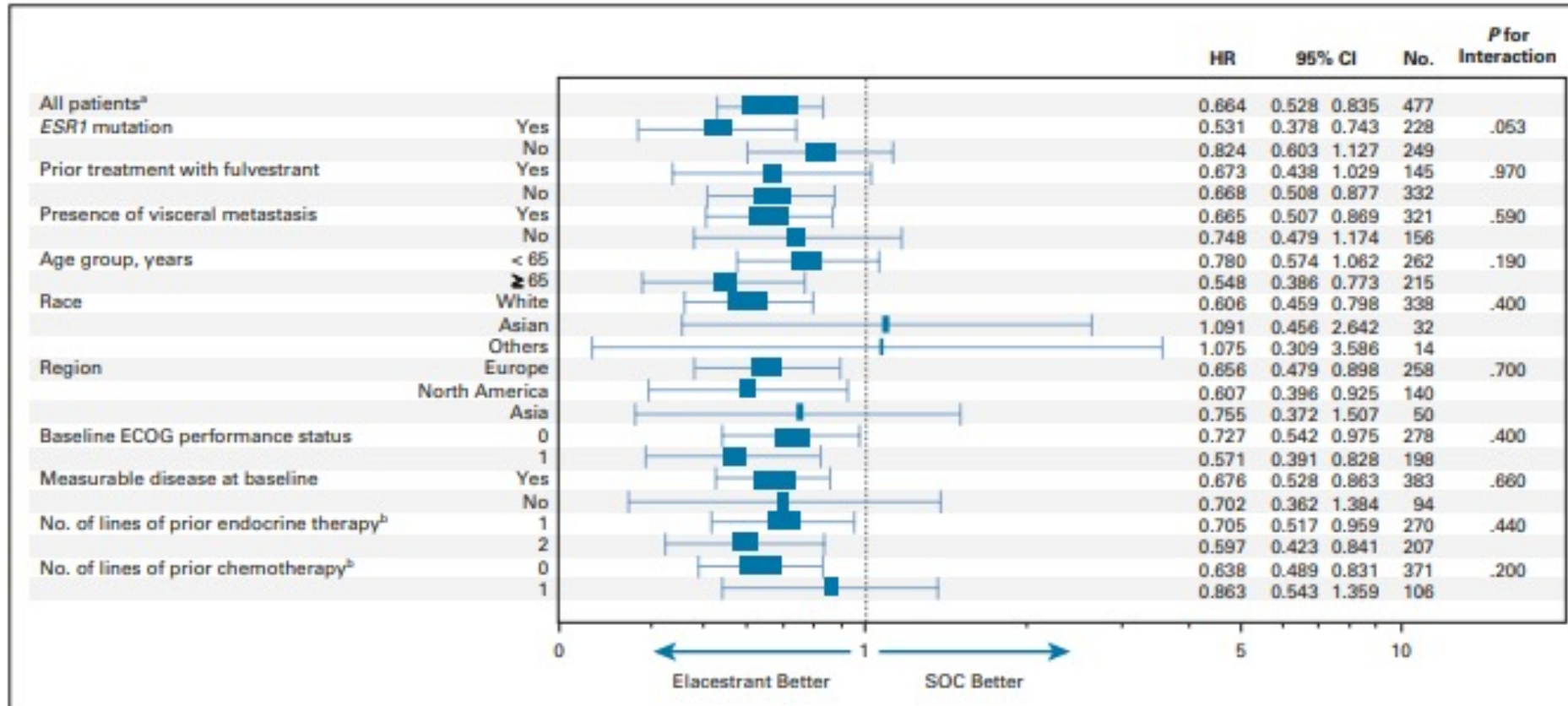
No. at risk:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Elacestrant	239	233	230	229	220	218	211	202	197	191	180	166	139	118	98	89	78	60	49	33	22	10	5	2	2	2	0	
SOC	238	223	216	206	164	187	179	177	173	163	157	144	118	96	78	67	49	42	31	23	15	6	3	1	1	1	0	



No. at risk:

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Elacestrant	115	112	111	111	105	103	101	95	93	90	86	80	68	55	45	40	36	25	17	13	11	4	2	2	2	2	0	
SOC	113	106	101	101	96	90	86	86	84	79	77	68	56	44	33	27	22	19	14	10	6	4	2	1	1	1	0	



AEs ^a Occurring in ≥ 10% of Patients in Any Arm	Elacestrant		Total		Fulvestrant		AI	
	All Grades	Grade 3/4	All Grades	Grade 3/4	All Grades	Grade 3/4	All Grades	Grade 3/4
Nausea	83 (35.0) ^d	6 (2.5)	43 (18.8)	2 (0.9)	26 (16.1)	0	17 (25.0)	2 (2.9)
Fatigue	45 (19.0)	2 (0.8)	43 (18.8)	2 (0.9)	35 (21.7)	1 (0.6)	8 (11.8)	1 (1.5)
Vomiting	45 (19.0) ^e	2 (0.8)	19 (8.3)	0	12 (7.5)	0	7 (10.3)	0
Decreased appetite	35 (14.8)	2 (0.8)	21 (9.2)	1 (0.4)	12 (7.5)	0	9 (13.2)	1 (1.5)
Arthralgia	34 (14.3)	2 (0.8)	37 (16.2)	0	28 (17.4)	0	9 (13.2)	0
Diarrhea	33 (13.9)	0	23 (10.0)	2 (0.9)	14 (8.7)	1 (0.6)	9 (13.2)	1 (1.5)
Back pain	33 (13.9)	6 (2.5)	22 (9.6)	1 (0.4)	16 (9.9)	1 (0.6)	6 (8.8)	0
AST increased	31 (13.1)	4 (1.7)	28 (12.2)	2 (0.9)	20 (12.4)	2 (1.2)	8 (11.8)	0
Headache	29 (12.2)	4 (1.7)	26 (11.4)	0	18 (11.2)	0	8 (11.8)	0
Constipation	29 (12.2)	0	15 (6.6)	0	10 (6.2)	0	5 (7.4)	0
Hot flush	27 (11.4)	0	19 (8.3)	0	15 (9.3)	0	4 (5.9)	0
Dyspepsia	24 (10.1)	0	6 (2.6)	0	4 (2.5)	0	2 (2.9)	0
ALT increased	22 (9.3)	5 (2.1)	23 (10.0)	1 (0.4)	17 (10.6)	0	6 (8.8)	1 (1.5)

Duration on CDK4/6i in the metastatic setting

	At least 6 months (92.3%)		At least 12 months (71.6%)		At least 18 months (50.0%)	
	Elacestrant (n=103)	SOC Hormonal Therapy (n=102)	Elacestrant (n=78)	SOC Hormonal Therapy (n=81)	Elacestrant (n=55)	SOC Hormonal Therapy (n=56)
Median PFS, months (95% CI)	4.14 (2.20-7.79)	1.87 (1.87-3.29)	8.61 (4.14-10.84)	1.91 (1.87-3.68)	8.61 (5.45-16.89)	2.10 (1.87-3.75)
PFS rate at 6 months, % (95% CI)	42.43 (31.15-53.71)	19.15 (9.95-28.35)	55.81 (42.69-68.94)	22.66 (11.63-33.69)	58.57 (43.02-74.12)	27.06 (13.05-41.07)
PFS rate at 12 months, % (95% CI)	26.02 (15.12-36.92)	6.45 (0.00-13.65)	35.81 (21.84-49.78)	8.39 (0.00-17.66)	35.79 (19.54-52.05)	7.73 (0.00-20.20)
PFS rate at 18 months, % (95% CI)	20.70 (9.77-31.63)	0.00	28.49 (14.08-42.89)	0.00	30.68 (13.94-47.42)	0.00
Hazard ratio (95% CI)	0.517 (0.361-0.738)		0.410 (0.262-0.634)		0.466 (0.270-0.791)	

CDK4/6i, cyclin-dependent kinase 4 and 6 inhibitor; CI, confidence interval; PFS, progression-free survival; SOC, standard of care (investigator's choice).

Presented at the 2022 San Antonio Breast Cancer Symposium, December 6-10, 2022, San Antonio, Texas.³

Summary

- Elacestrant can be used in advanced HR+ disease as second- or third-line therapy after ET + CDK 4/6 inhibitor for patients with an ESR1 mutation
- PFS was modest, OS did not accrue enough events
- Benefit was seen across subgroups regardless of duration of prior exposure to CDK 4/6 inhibitor

Take Home Points

- Targeted therapies are improving outcomes for breast cancer patients
- Her-2 1+ and 2+ by IHC is now a target for trastuzumab deruxtecan in the advanced setting
- Adjuvant abemaciclib for high-risk patients is currently the only FDA-approved CDK 4/6 inhibitor, but more likely to come
- ESR1 mutations can extend endocrine therapy options in the metastatic setting for HR+ patients

