

Novel Agents for ER+ Disease

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Declaration of interests

Kevin Kalinsky, MD, MS, FASCO

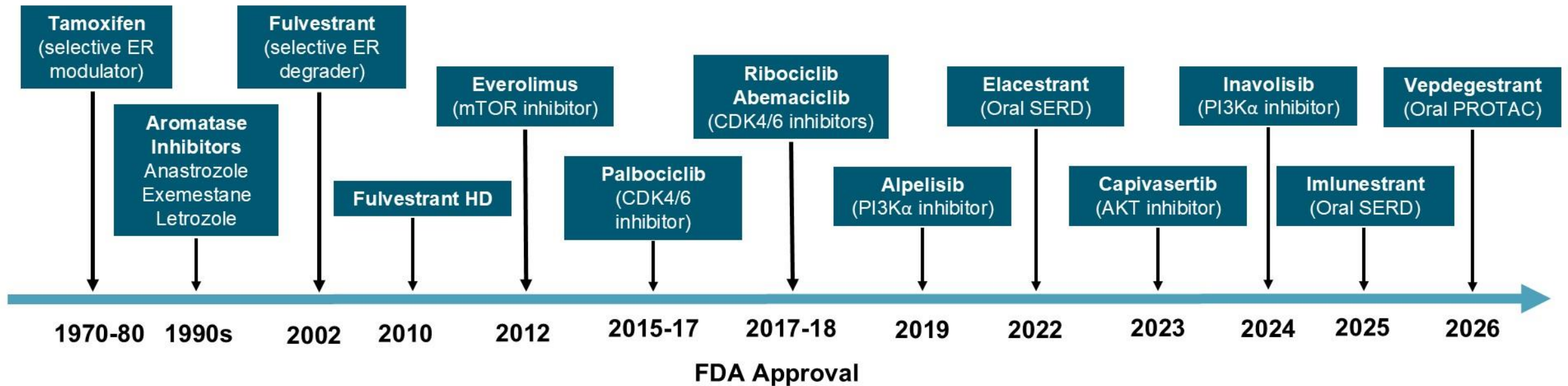
Consultant:

Genentech/Roche, Immunomedics, Seattle Genetics, AstraZeneca, Daiichi Sankyo, Puma Biotechnology, Mersana, Menarini Silicon Biosystems, Myovant Sciences, Takeda, Merck

Employee:

Spouse: EQRX (Prior Employee), ADC Therapeutics

Evolving *Hormonal* Treatment Landscape of HR+ Advanced MBC



CDK 4/6i: PFS and OS in First Line Metastatic Trials

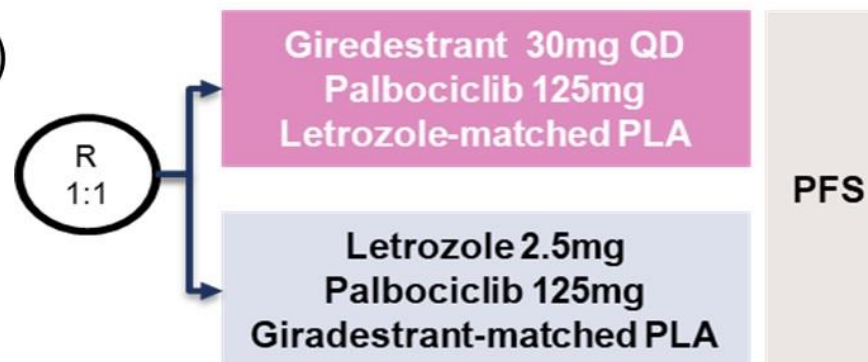
Trial	N=	CDK4/6i	Endocrine Therapy	Design	PFS - Median (Months)	OS – Median (Months)
PALOMA 1	165	Palbociclib (P)	Letrozole (L)	Phase II	10.2 (L) vs 20.2 (L+P) HR 0.49; (95% CI 0.32–0.75)	33.3 (L) vs 37.5 (P+L) HR 0.81 (95% CI 0.49-1.35)
PALOMA 2	666	Palbociclib (P)	Letrozole (L)	Phase III	14.5 (L) vs 24.8 (L+P) HR 0.58; (95% CI, 0.46 to 0.72)	51.2 (L) vs 53.9 (P+L) HR 0.96 (95% CI, 0.78 to 1.18)
MONARCH 3	493	Abemaciclib (A)	NSAI	Phase III	14.7 (A) vs NR (ET+ A) HR 0.54; (95% CI, 0.41 to 0.72)	53.7 (AI) vs 66.8 (AI + A) HR 0.80; (95% CI 0.64-1.02)
MONALEESA 2	668	Ribociclib (R)	Letrozole (L)	Phase III	16.0 (L) vs NR (L+R) HR 0.56; (95% CI, 0.43 to 0.72)	51.4 (L) Vs 63.9 (R+L) HR 0.76, (95% CI 0.63 to 0.93)
MONALEESA 7	672	Ribociclib (R)	ET (Tam or AI) + OFS	Phase III	13.0 (ET) vs 23.8 (R+ET) HR 0.55; (95% CI 0.44-0.69)	48.0 (ET) vs 58.7 (ET+Rib) HR 0.71; (95% CI, 0.54 to 0.95)

Finn. *Lancet Oncol* 2014
 Finn *NEJM* 2016 and Slamon *J Clin Oncol* 2024
 Goetz *J Clin Oncol* 2017 and Goetz *Annals of Oncology* 2024
 Hortobagyi *NEJM* 2016 and Hortobagyi *NEJM* 2022
 Tripathy *Lancet Oncol* 2018 and Im *NEJM* 2019

Trials of Oral SERDs combined with CDK4/6i in the 1st-Line Endocrine Sensitive HR+/HER2- Metastatic Setting

persevERA (NCT04546009)

- ER+/HER2- LA/ABC
- No prior systemic tx for ABC
- N=992



SERENA-4 (NCT04711252)

- ER+/HER2- LA/ABC
- No prior systemic tx for ABC
- n=1342



persevERA BC study design

A Phase III, randomized, double-blind, placebo-controlled, multicenter trial in 1L LA/mBC

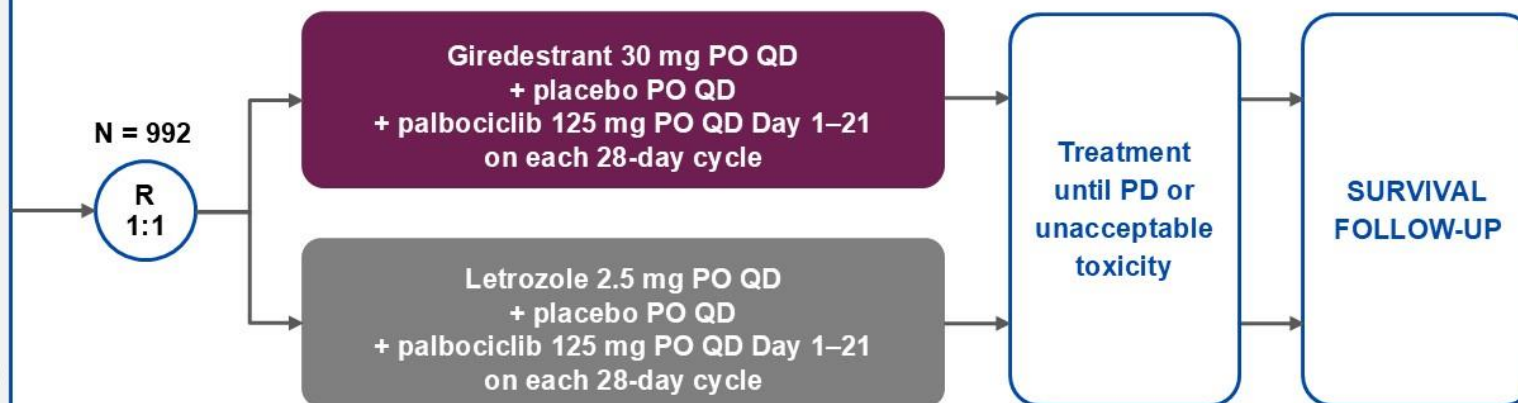
Key eligibility criteria:

- 1L ER+, HER2– LA/mBC*
- Locally confirmed histologic/cytologic diagnosis
- No prior treatment for advanced disease
- No prior treatment with a SERD
- Disease recurrence > 12 months from completing prior (neo)adjuvant tamoxifen/AI
- Disease recurrence ≤ 12 months for patients receiving (neo)adjuvant tamoxifen (protocol v1)
- No active cardiac disease or history of cardiac dysfunction

* Patients with *de novo* mBC were capped at 20%

Stratification factors:

- Site of disease: Visceral vs non-visceral
- Menopausal status: Post-menopausal vs pre-menopausal/male
- Region: North America vs Western Europe vs Asia–Pacific vs other
- TFI since the end of prior (neo)adjuvant therapy: *De novo* metastatic vs ≤ 12 months vs > 12 months



Primary endpoint:

- Investigator-assessed PFS (INV-PFS) per RECIST v1.1

Secondary endpoints:

- OS, ORR, CBR, DoR, safety, PROs (TTD of pain, physical functioning, role functioning, GHS/QoL)

Enrollment: October 9, 2020, to March 27, 2023. ER+ was defined as ≥ 1% positive cells by immunohistochemistry. Pre-menopausal women, and men, also received ovarian function suppression with an approved luteinizing hormone-releasing hormone agonist. 1L, first line; AI, aromatase inhibitor; CBR, clinical benefit rate; DoR, duration of response; ER+, estrogen receptor-positive; GHS/QoL, global health status/quality of life; HER2–, HER2-negative; (LA/m)BC, (locally advanced/metastatic) breast cancer; ORR, objective response rate; OS, overall survival; PD, progressive disease; PO, orally; PRO, patient-reported outcome; QD, once daily; R, randomization; RECIST, Response Evaluation Criteria in Solid Tumours; SERD, selective estrogen receptor antagonist and degrader; TFI, treatment-free interval; TTD, time to deterioration. ClinicalTrials.gov number, NCT04546009. Adapted from Turner NC, *et al.* ASCO 2021 (TPS1103), with permission.

Patient demographics and baseline characteristics

	Giredestrant + palbociclib n = 495	Letrozole + palbociclib n = 497		Giredestrant + palbociclib n = 495	Letrozole + palbociclib n = 497
Median age, years (range)	63.0 (26–87)	63.0 (30–89)	PgR status, n (%)		
Female sex, n (%)	491 (99.2)	493 (99.2)	Positive	412 (83.2)	390 (78.5)
Race, n (%)			Negative	81 (16.4)	104 (20.9)
American Indian or Alaska Native	33 (6.7)	23 (4.6)	Unknown	2 (0.4)	3 (0.6)
Asian	139 (28.1)	136 (27.4)	TFI since end of (neo)adjuvant therapy, n (%)[†]		
Black or African American	8 (1.6)	11 (2.2)	≤ 12 months [‡]	51 (10.3)	53 (10.7)
Other*	19 (3.8)	22 (4.4)	> 12 months	341 (68.9)	346 (69.6)
White	296 (59.8)	305 (61.4)	No prior therapy	103 (20.8)	98 (19.7)
Region, n (%)[†]			Site of disease, n (%)[†]		
Asia–Pacific	137 (27.7)	135 (27.2)	Visceral	301 (60.8)	298 (60.0)
North America	65 (13.1)	66 (13.3)	Non-visceral	194 (39.2)	199 (40.0)
Western Europe	121 (24.4)	124 (24.9)	Bone only involvement, n (%)	42 (8.5)	47 (9.5)
Other	172 (34.7)	172 (34.6)	Previous (neo)adjuvant treatment, n (%)	392 (79.2)	399 (80.3)
Menopausal status, n (%)[†]			Previous (neo)adjuvant chemotherapy, n (%)	300 (60.6)	285 (57.3)
Pre-/peri-menopausal	97 (19.6)	91 (18.3)	Previous (neo)adjuvant ET, n (%)		
Post-menopausal	393 (79.4)	402 (80.9)	AI only	173 (34.9)	162 (32.6)
Male	4 (0.8)	4 (0.8)	Tamoxifen only	102 (20.6)	112 (22.5)
Missing	1 (0.2)	0	AI + tamoxifen	108 (21.8)	119 (23.9)
ER status, n (%)					
Low-positive (1–10% of cells)	6 (1.2)	12 (2.4)			
Positive (> 10% of cells)	487 (98.4)	485 (97.6)			
Unknown	2 (0.4)	0			

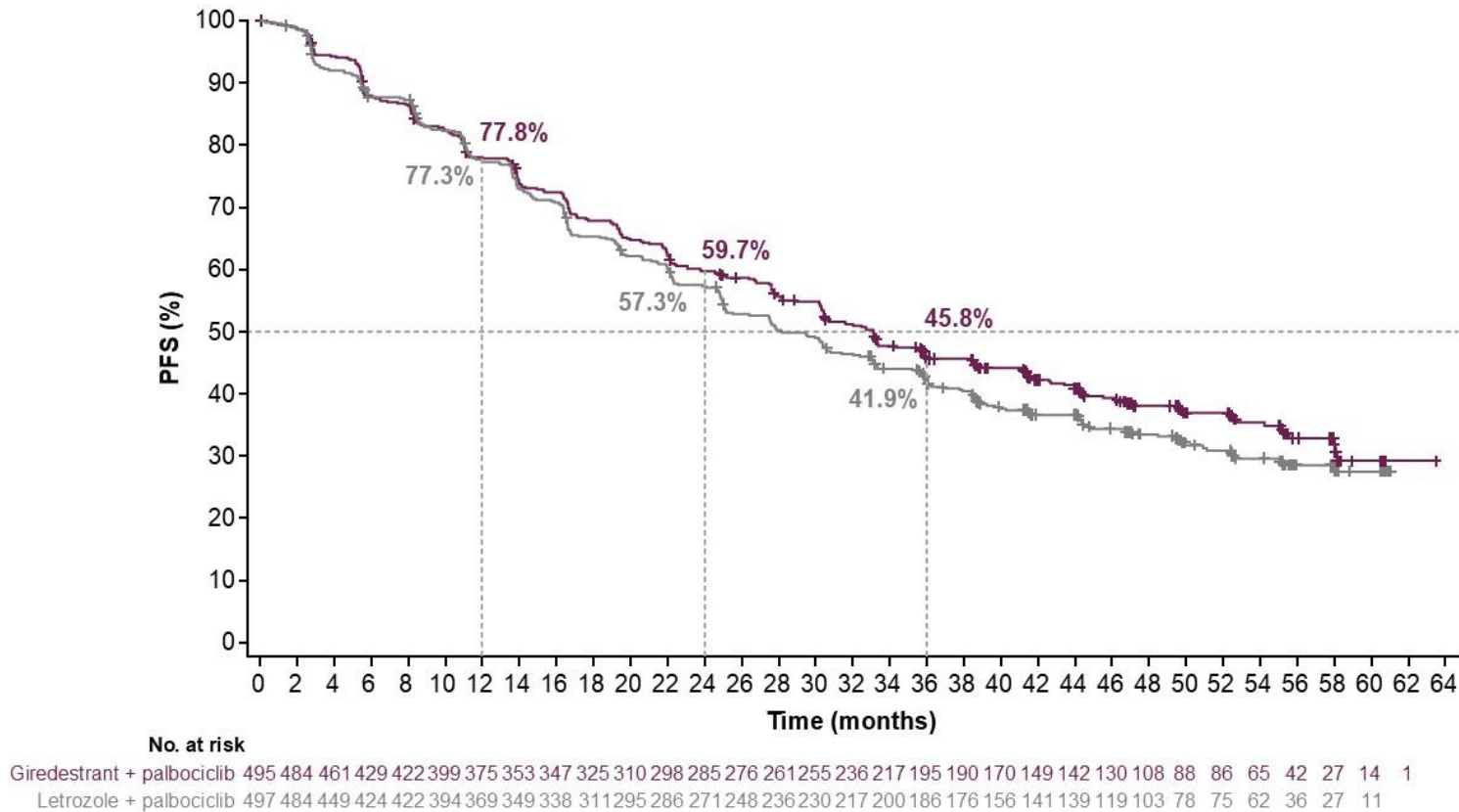
Baseline demographics and characteristics were balanced between arms

Data cutoff: January 30, 2026.

* "Other" refers to "Multiracial", "Native Hawaiian or Other Pacific Islander", or "unknown". † Per electronic case report form. ‡ Recurrence ≤ 12 months on prior adjuvant tamoxifen.

AI, aromatase inhibitor; ER, estrogen receptor; ET, endocrine therapy; PgR, progesterone receptor; TFI, treatment-free interval.

Primary endpoint: INV-PFS



	Giredestrant + palbociclib n = 495	Letrozole + palbociclib n = 497
Events, n (%)	300 (60.6)	323 (65.0)
Median, months (95% CI)	33.1 (30.2, 38.3)	28.2 (25.0, 33.1)
Stratified HR (95% CI)	0.89 (0.76, 1.05); p = 0.1553	

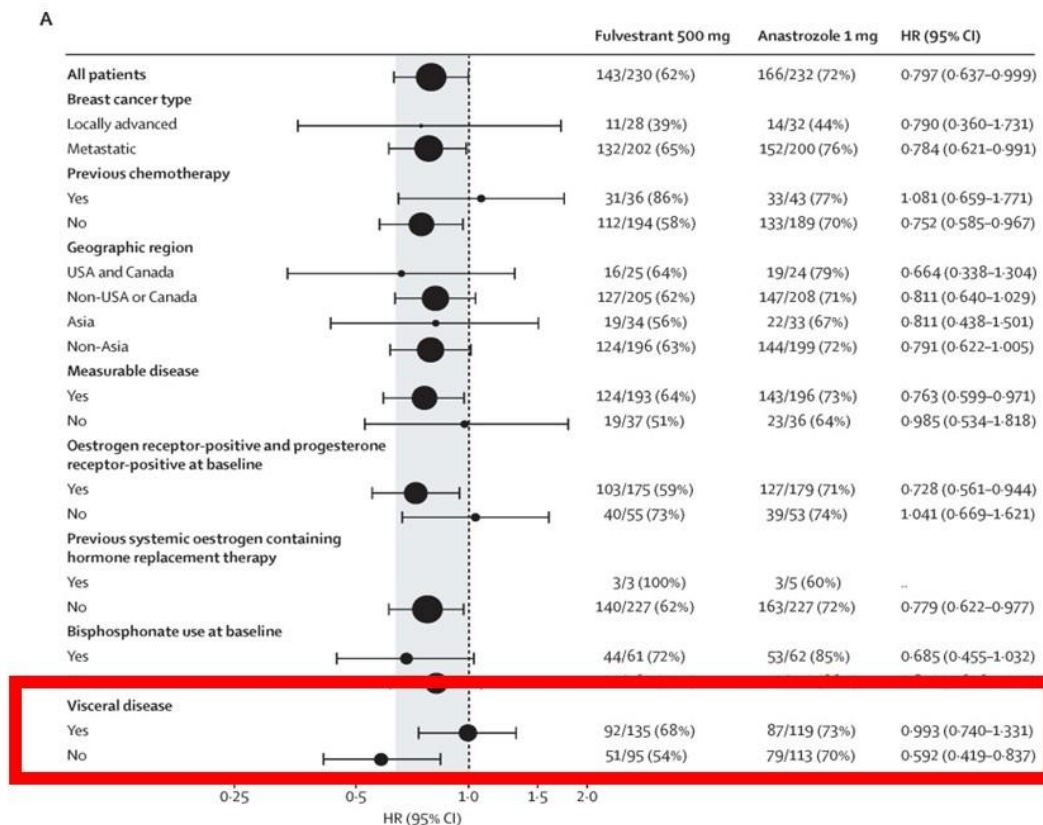
Median follow-up
Giredestrant arm: 52.2 months (range: 0.4–63.5)
Letrozole arm: 52.1 months (range: 0.3–62.6)

Giredestrant + palbociclib demonstrated a numerical improvement in INV-PFS vs letrozole + palbociclib, despite the lack of statistical significance

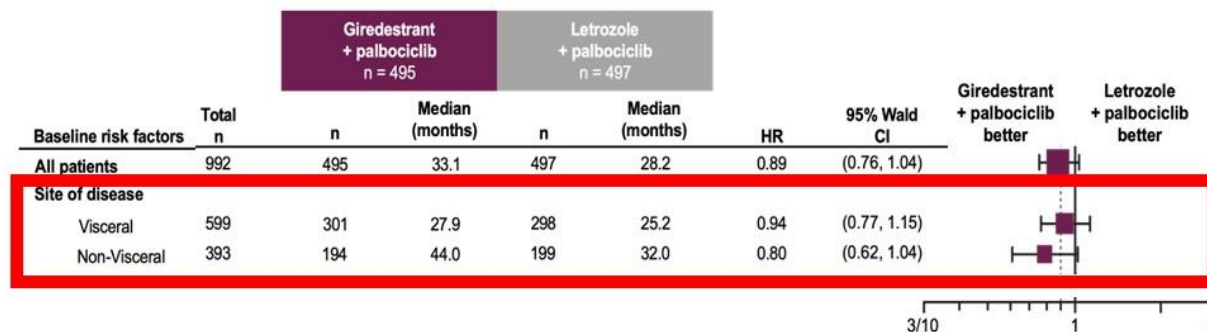
Outcomes in FALCON and PersevERA by Visceral/non-Visceral Status

48% of FALCON patients had non-visceral mets

39% of PersevERA patients had non-visceral mets



HR 0.59 (0.42-0.84) vs. 0.99 (0.74-1.33)



HR 0.80 (0.62-1.04) vs. HR 0.94 (0.77-1.15)

Hypothesis: Patients with non-visceral disease (e.g. bone) may be:

- 1) More likely to derive benefit from SERDs vs AIs
- 2) More likely to develop *ESR1* mutations¹

PADA-1

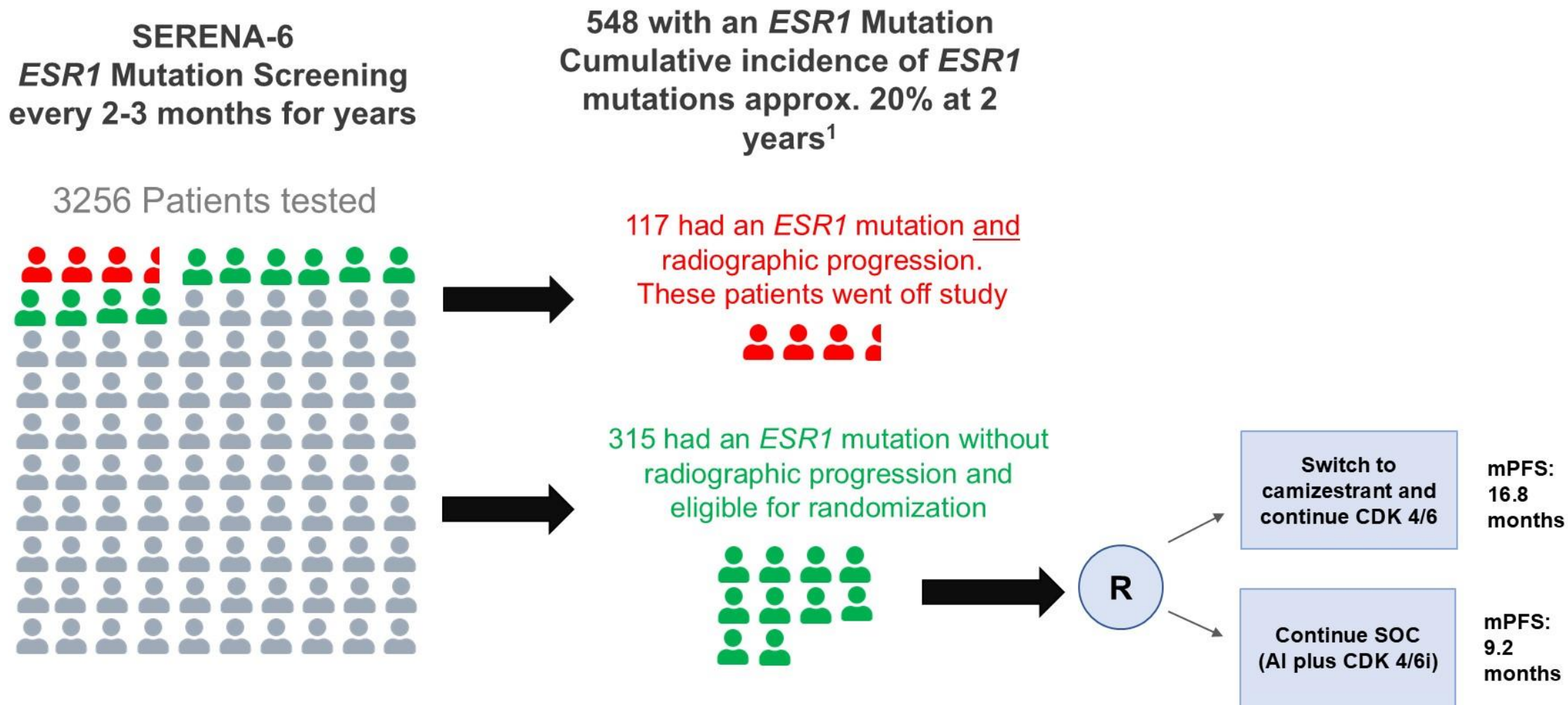
Cabel et al

Annals of Oncology 2025

Prevalence of *ESR1* Mutations in Untreated vs Treated ER+/HER2- mBC

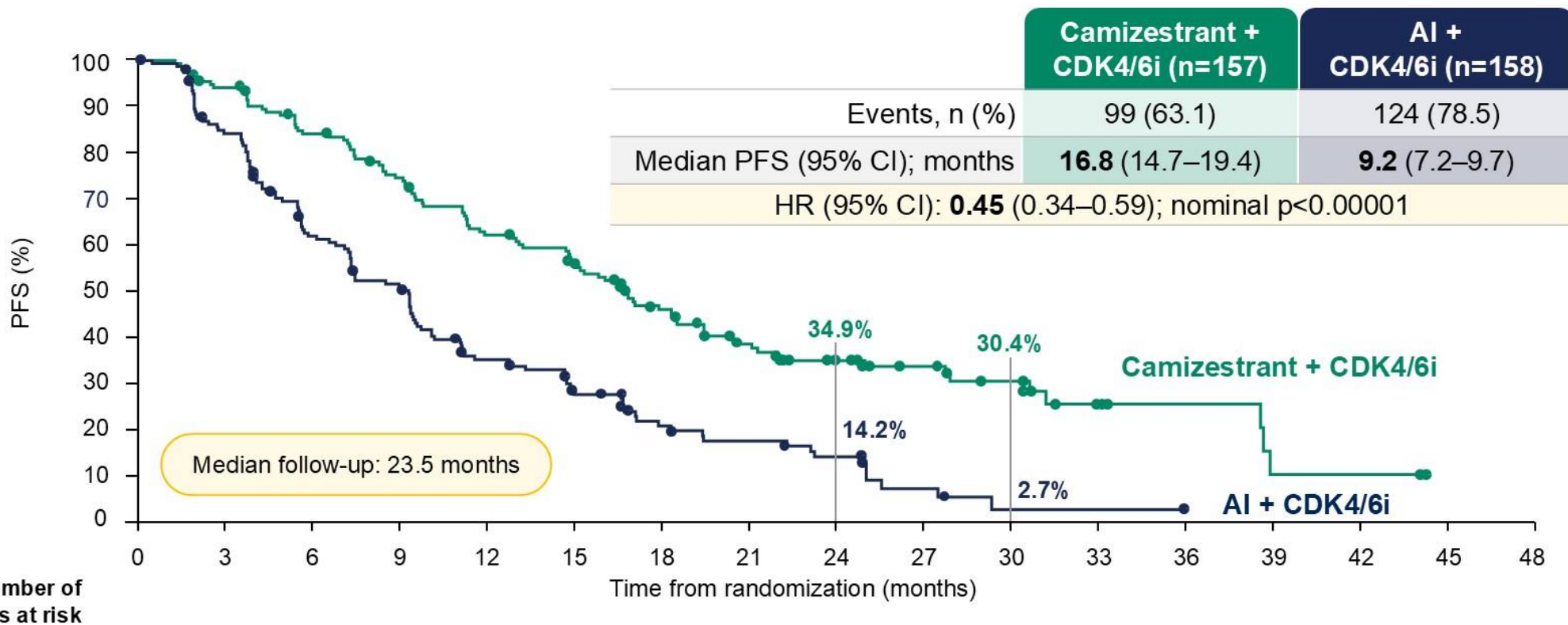
Treatment Setting	<i>ESR1</i> Mutation Prevalence ¹⁻⁵
At Initiation of First-Line ET	~5%
Second-Line	~33%
Third-Line	Up to 40%

SERENA 6 Consort Diagram (Strategy)



Updated PFS (primary endpoint, investigator-assessed)

With longer follow-up, median PFS improvement with camizestrant + CDK4/6i is 7.6 months



DCO3 (Jan 02, 2026). At DCO3, 45 patients in the camizestrant + CDK4/6i arm and 12 patients in the AI + CDK4/6i arm were still receiving study treatments. The p value is based on the stratified log-rank test, stratified by disease site (visceral vs non-visceral), timing of *ESR1m* detected (first vs subsequent test), and time from initiation of AI + CDK4/6i to randomization (<18 months vs ≥18 months).

First subsequent therapy

Patients who received a first subsequent therapy at DCO3

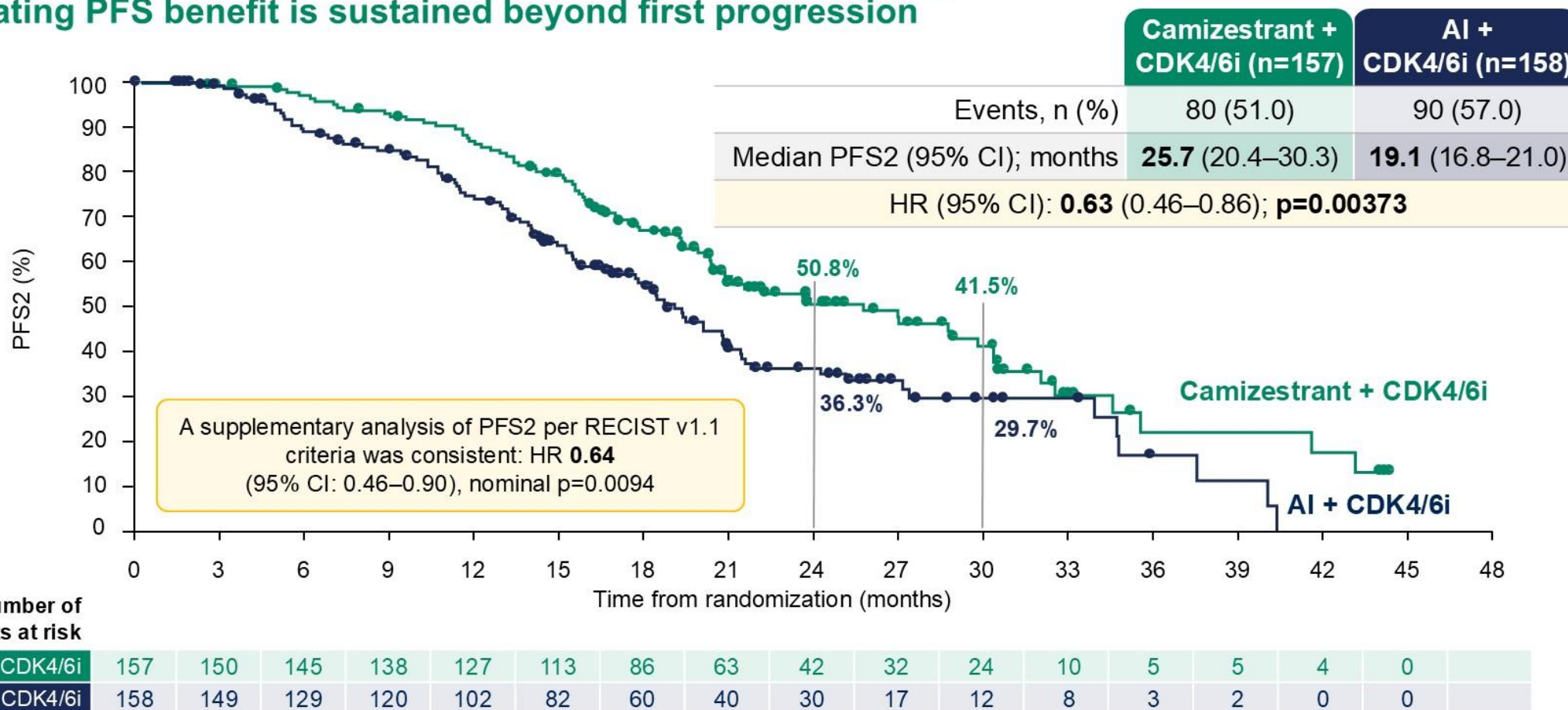
	Camizestrant + CDK4/6i (n=87)	AI + CDK4/6i (n=117)
Endocrine-based therapy	48 (55.2%)	78 (66.7%)
SERD or novel ET* ± targeted therapy	24 (27.6%)	57 (48.7%)
Fulvestrant ± targeted therapy	22 (25.3%)	42 (35.9%)
Oral SERD or novel ET* ± targeted therapy	2 (2.3%)	15 (12.8%)
Other endocrine regimens [†] ± targeted therapy	24 (27.6%)	21 (17.9%)
Cytotoxic therapy	38 (43.7%)	36 (30.8%)
Oral chemotherapy	22 (25.3%)	12 (10.3%)
IV regimen	16 (18.4%)	24 (20.5%)
Chemotherapy	14 (16.1%)	14 (12.0%)
Antibody–drug conjugate	2 (2.3%)	10 (8.5%)
Other[§]	1 (1.1%)	3 (2.6%)

Rate of visceral disease at progression was balanced between arms (supplemental slides)
Approximately half of the patients in the control arm received SERD or novel ET ± targeted therapy

DCO3 (Jan 02, 2026). *Novel ET subgroup includes the following terms – elacestrant, imlunestrant, camizestrant, vepdegestrant, lasofoxifene, and palazestrant. Oral SERDs included elacestrant, imlunestrant, camizestrant, and palazestrant. [†]Other endocrine regimens include AI or tamoxifen. [§]Other included PARPi (olaparib, talazoparib) or androgen receptor modulator (enobosarm). Novel ET was used in any subsequent line of therapy in 2/87 (2.3%) patients in the camizestrant+CDK4/6i arm and 23/117 (19.7%) patients in the AI+CDK4/6i arm. ET, endocrine therapy; IV, intravenous; SERD, selective estrogen receptor degraders.

Final second progression-free survival (PFS2)

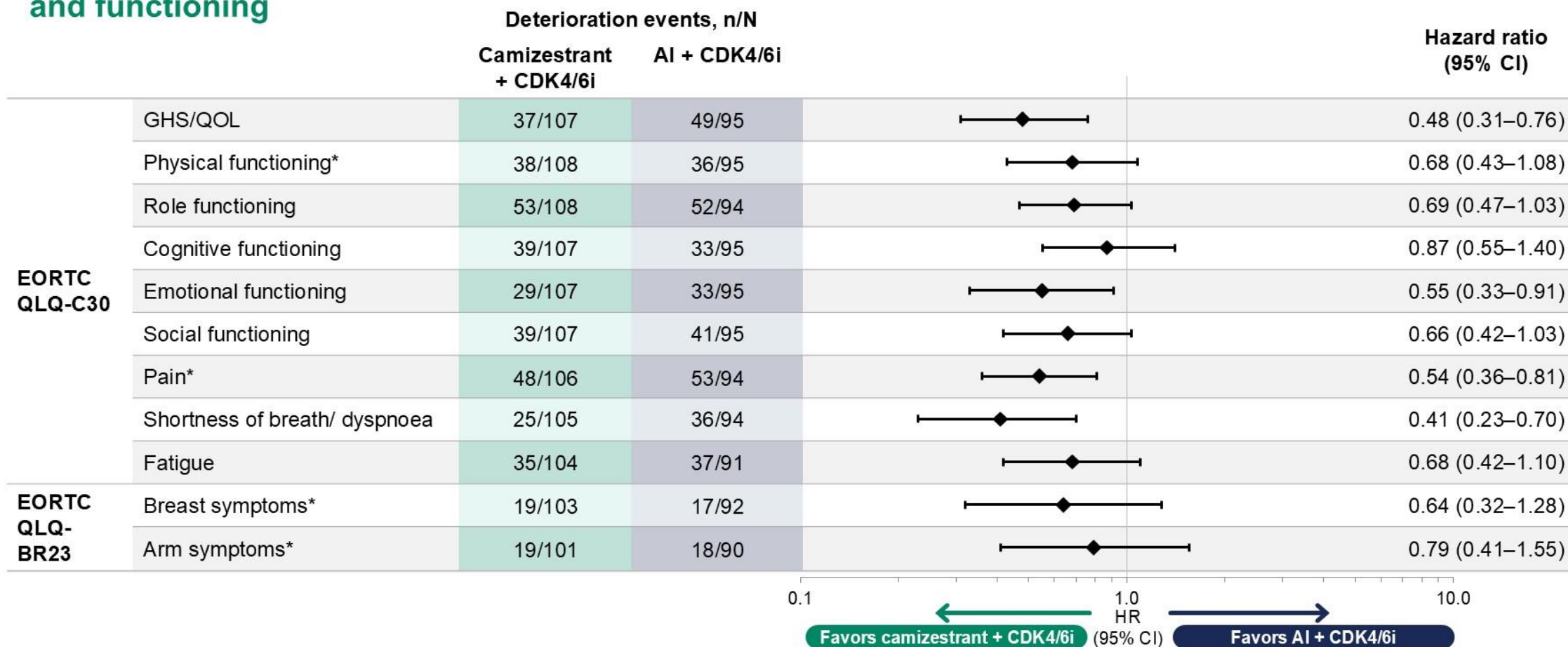
Camizestrant + CDK4/6i significantly extended time to second progression or death, demonstrating PFS benefit is sustained beyond first progression



DCO3 (Jan 02, 2026). PFS2, defined in a standard manner (assessed by the investigator according to local standard clinical practice) as the time from randomisation to the earliest of disease progression after first subsequent therapy or death in the primary analysis. The p value is based on the stratified log-rank test, stratified by disease site (visceral vs non-visceral), timing of *ESR1m* detected (first vs subsequent test), and time from initiation of AI+CDK4/6i to randomization (<18 months vs ≥18 months).

Updated patient reported outcomes

Camizestrant + CDK4/6i reduced the risk of deterioration in patient-reported cancer symptoms and functioning

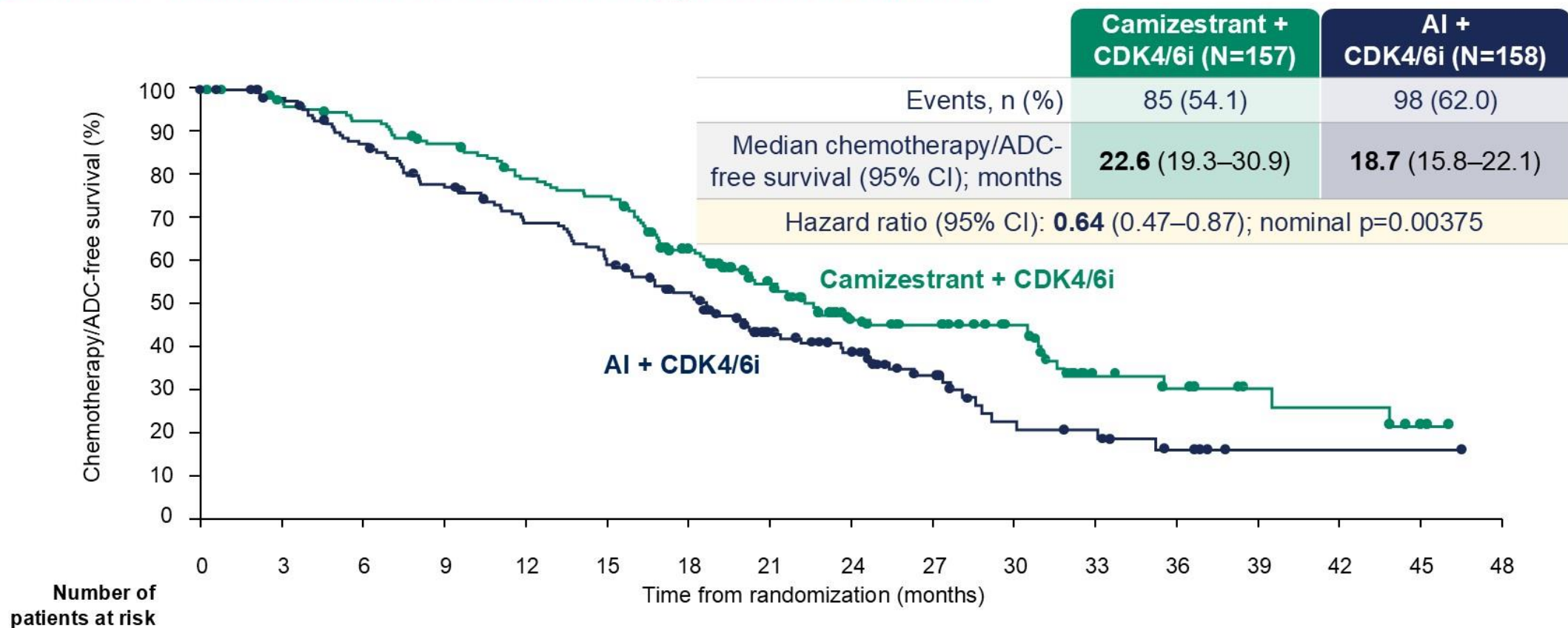


DCO3 (Jan 02, 2026). Time to deterioration defined as time from randomization to deterioration based on meaningful change thresholds (16.6 for GHS/QoL, role, emotional, cognitive, social functioning, pain and breast symptoms, 22.2 for fatigue and arm symptoms, 13.3 for physical functioning, and 10 for dyspnoea). *Time to deterioration in pain, physical functioning, breast symptoms, and arm symptoms were pre-defined secondary endpoints.

EORTC QLQ-C30, European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire - Core 30; EORTC QLQ-BR23, EORTC QLQ breast cancer-specific supplement; GHS, global health status; QoL, quality of life.

Chemotherapy/ADC-free survival

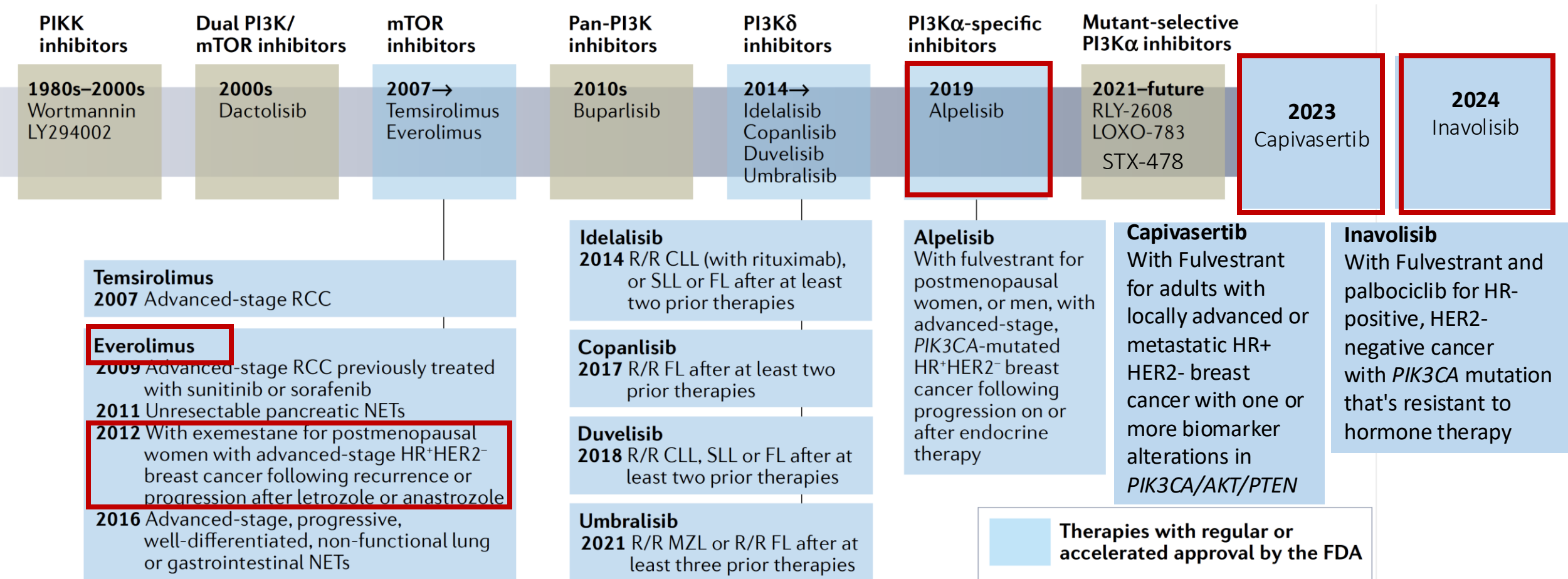
Camizestrant + CDK4/6i extended chemotherapy/ADC-free survival



Camizestrant + CDK4/6i	157	149	141	131	117	111	85	65	43	36	28	13	10	7	6	3	0
AI + CDK4/6i	158	149	131	115	99	85	69	45	35	22	12	10	5	1	1	1	0

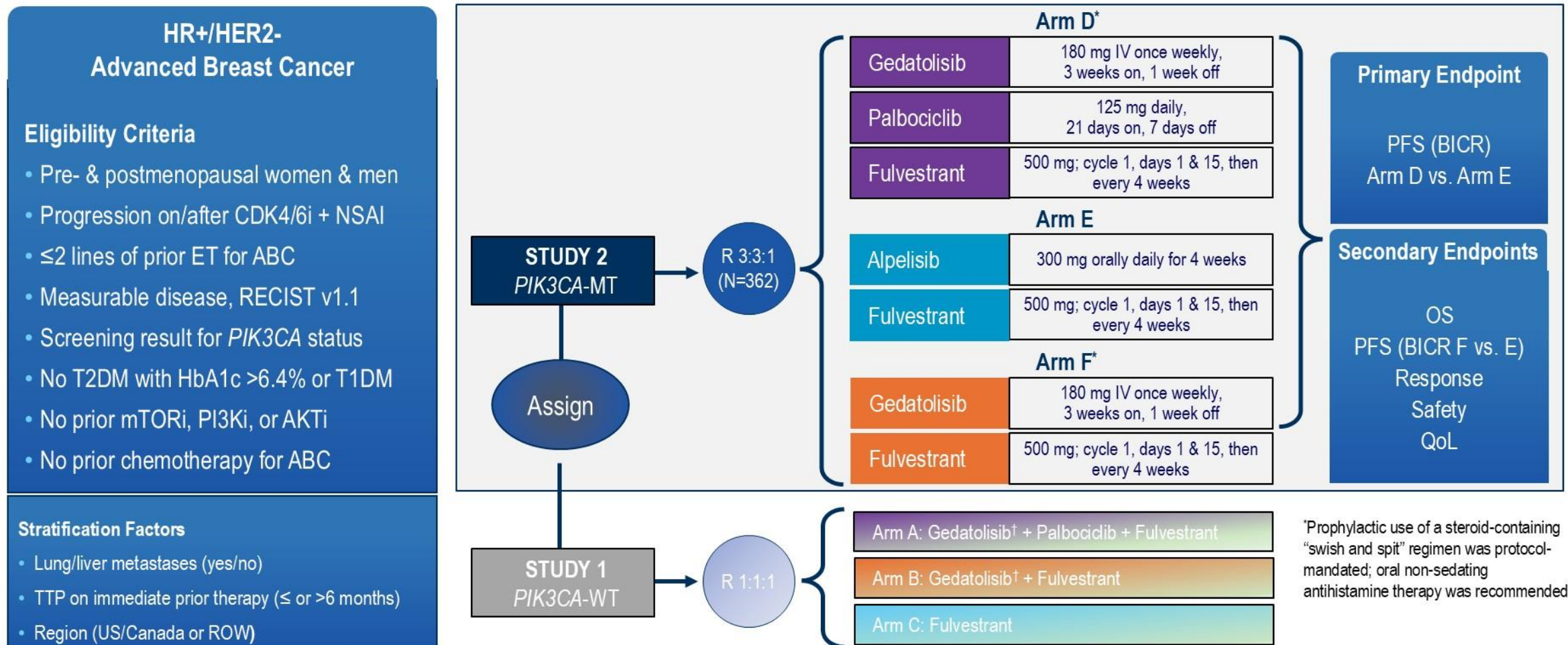
DCO3 (Jan 02, 2026). The p value is based on the stratified log-rank test, stratified by disease site (visceral vs non-visceral), timing of ESR1m detected (first vs subsequent test), and time from initiation of AI+CDK4/6i to randomization (<18 months vs ≥18 months).

Drugging the PI3K Pathway Through the Decades



CLL, chronic lymphocytic leukemia; FL, follicular lymphoma; MZL, marginal zone lymphoma; NET, neuroendocrine tumor; R/R, relapse/refractory; RCC, renal cell carcinoma; SLL, small lymphocytic lymphoma.

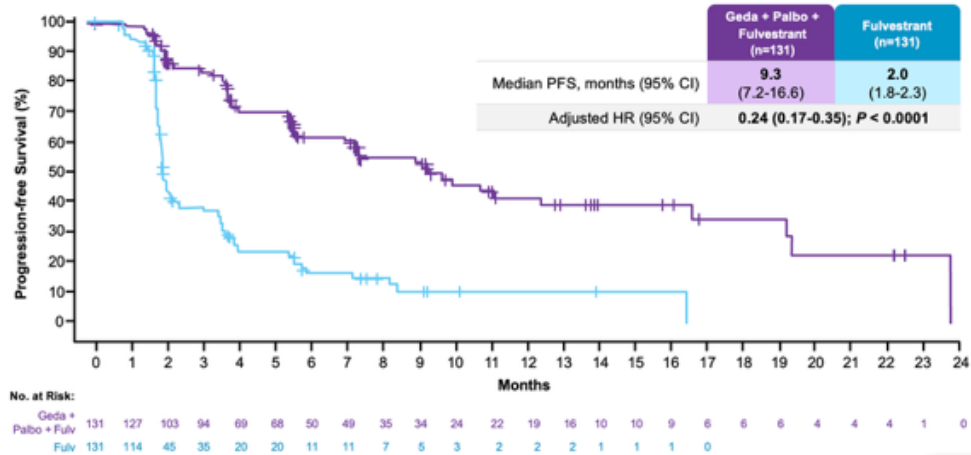
VIKTORIA-1 Study Design



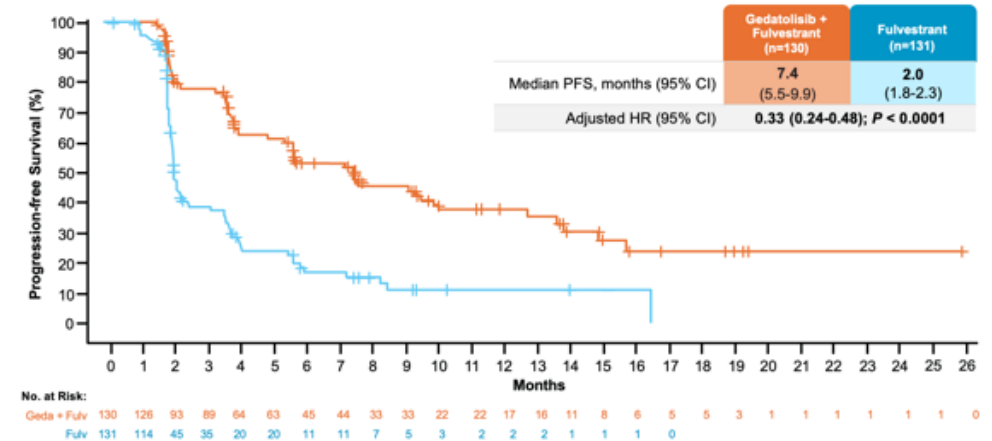
Abbreviations: ABC, advanced breast cancer; AKTi, protein kinase B inhibitor; BICR, blinded independent central review; CDK4/6i, cyclin-dependent kinase 4 and 6 inhibitor; ET, endocrine therapy; HbA1c, hemoglobin A1c; HER2-, human epidermal growth factor receptor 2-negative; HR+, hormone receptor-positive; IV, intravenous; MT, mutant; mTORi, mechanistic target of rapamycin inhibitor; NSAI, non-steroidal aromatase inhibitor; OS, overall survival; PFS, progression-free survival; PI3Ki, phosphatidylinositol 3-kinase inhibitor; QoL, quality of life; R, randomization; ROW, rest of world; T1DM, type 1 diabetes mellitus; T2DM, type 2 diabetes mellitus; TTP, time to progression; WT, wild-type

VIKTORIA-1 Study 1 results for PI3K WT

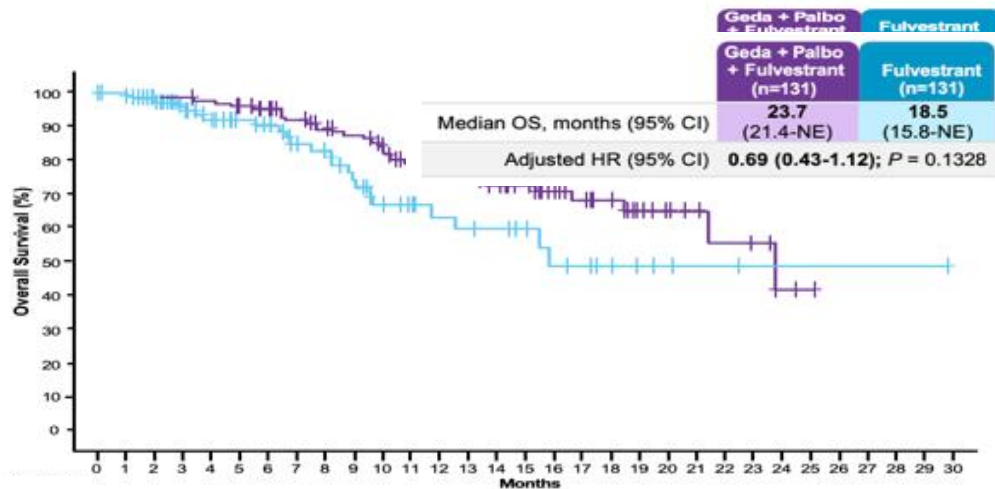
PFS Gedatolisib Triplet vs. Fulvestrant



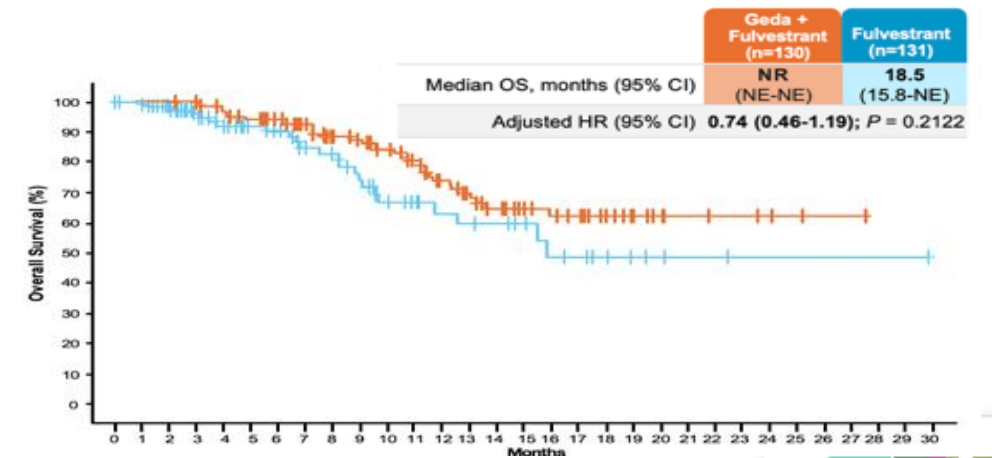
PFS Gedatolisib Doublet vs. Fulvestrant



Interim OS Censored at Cross-Over Gedatolisib Triplet vs. Fulvestrant



Interim OS Censored at Cross-Over Gedatolisib Doublet vs. Fulvestrant

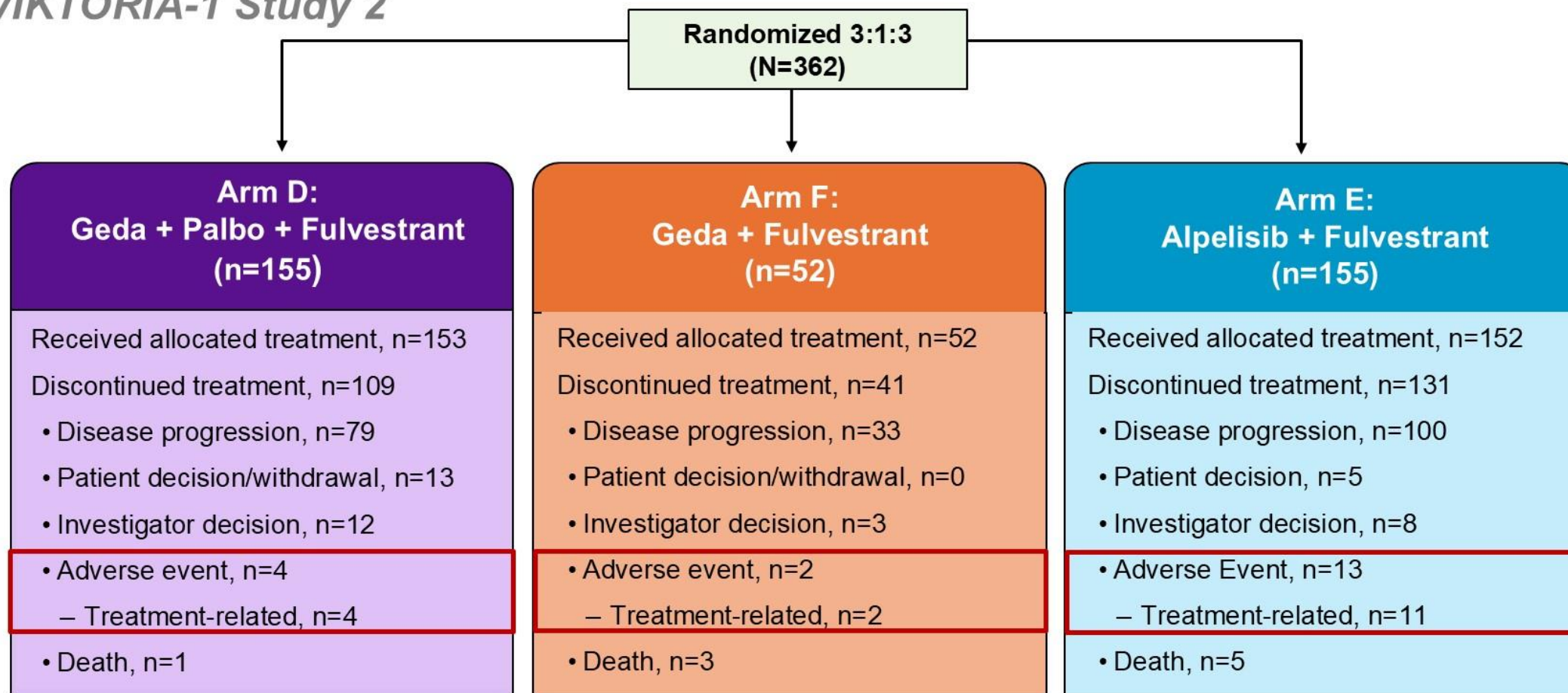


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Hurvitz SA et al, ESMO 2025.

Patient Disposition

VIKTORIA-1 Study 2

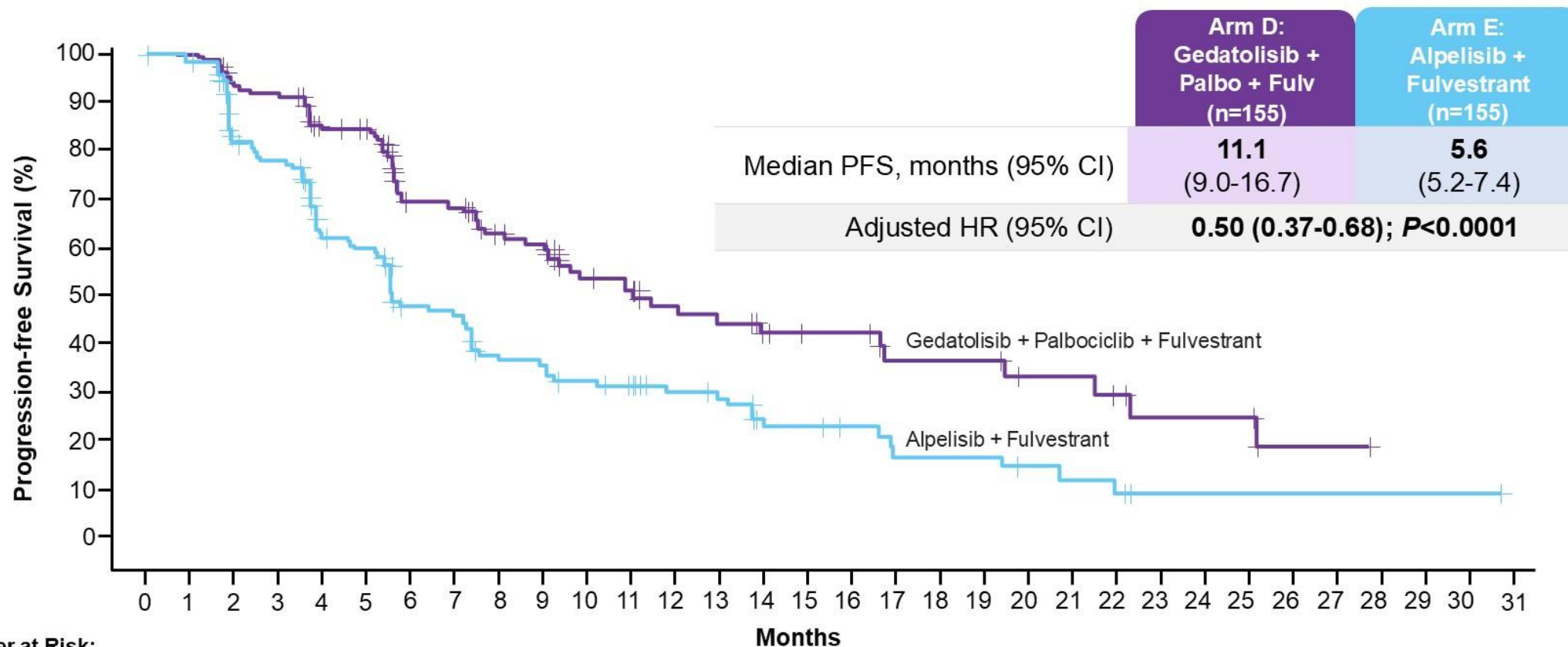


Abbreviations: Geda, gedatolisib; Palbo, palbociclib.

Data cut-off: March 9, 2026; median follow-up: 12.8 months (interquartile range: 7.5-19.9)

Primary Endpoint: Progression-Free Survival (BICR)

Gedatolisib Triplet vs. Alpelisib + Fulvestrant in VIKTORIA-1 Study 2

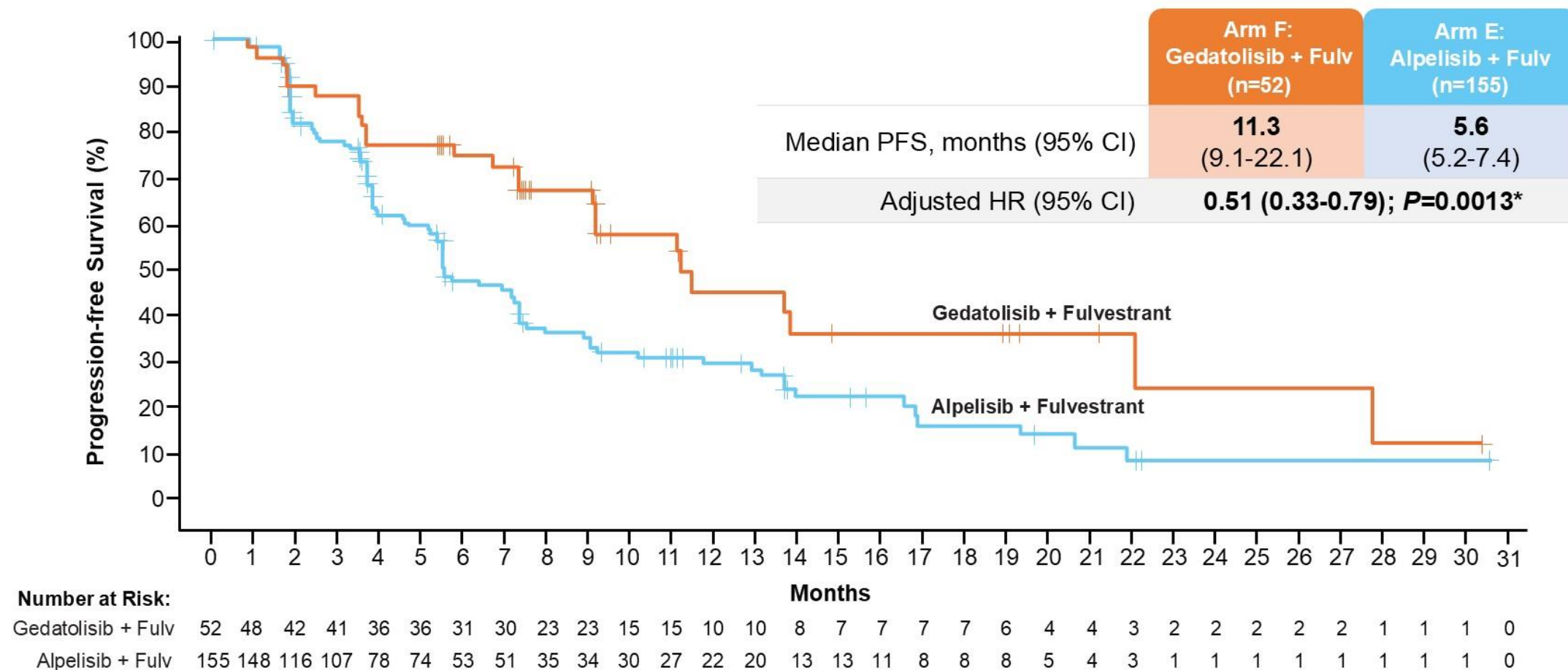


Number at Risk:

Geda + Palbo + Fulv	155	150	134	131	110	107	77	76	62	57	42	38	27	25	20	16	16	12	12	12	9	9	7	5	5	5	2	2	0	
Alpelisib + Fulv	155	148	116	107	78	74	53	51	35	34	30	27	22	20	13	13	11	8	8	8	5	4	3	1	1	1	1	1	1	0

Secondary Endpoint: Progression-Free Survival (BICR)

Gedatolisib Doublet vs. Alpelisib + Fulvestrant in VIKTORIA-1 Study 2



*Arm F vs. E analysis was not part of the primary efficacy analysis in the hierarchical order.

Safety and Tolerability

Safety Population in VIKTORIA-1 Study 2

Exposure	Arm D: Gedatolisib + Palbociclib + Fulvestrant (n=153)			Arm F: Gedatolisib + Fulvestrant (n=52)			Arm E: Alpelisib + Fulvestrant (n=152)		
Median RDI, Geda (IQR)	93.3 (80.6-100)			100 (97.8-100)			--		
Median RDI, Alpe (IQR)	--			--			81.7 (64.8-96.2)		
TRAE and TR-SAE, n (%)									
Pts with ≥1 TRAE	150 (98.0)			50 (96.2)			147 (96.7)		
Study tx D/C for TRAE	4 (2.6)			2 (3.8)			11 (7.1)		
Pts with ≥1 TR-SAE	16 (10.5)			2 (3.8)			20 (13.2)		
Deaths due to TR-SAE*	1 (0.7)			0			2 (1.3)		
TRAE, n (%)†	Any Grade	Grade 3	Grade 4	Any Grade	Grade 3	Grade 4	Any Grade	Grade 3	Grade 4
Neutropenia‡	97 (63.4)	73 (47.7)	17 (11.1)	1 (1.9)	0	0	2 (1.3)	0	1 (0.7)
Stomatitis‡	94 (61.4)	25 (16.3)	0	32 (61.5)	3 (5.8)	0	52 (34.2)	8 (5.3)	0
Nausea	70 (45.8)	5 (3.3)	0	21 (40.4)	1 (1.9)	0	50 (32.9)	2 (1.3)	0
Rash‡	40 (26.1)	10 (6.5)	0	17 (32.7)	3 (5.8)	0	56 (36.8)	23 (15.1)	0
Vomiting	39 (25.5)	0	0	10 (19.2)	0	0	23 (15.1)	1 (0.7)	0
Fatigue	33 (21.6)	5 (3.3)	0	11 (21.2)	1 (1.9)	0	32 (21.1)	4 (2.6)	0
Diarrhea§	23 (15.0)	2 (1.3)	0	5 (9.6)	0	0	61 (40.1)	9 (5.9)	1 (0.7)
Hyperglycemia‡,§	23 (15.0)	4 (2.6)	0	6 (11.5)	0	0	88 (57.9)	21 (13.8)	1 (0.7)

*Grade 5 events include fatal cerebral hemorrhage (gedatolisib triplet), urosepsis (alpelisib + fulvestrant group), and general physical health decline (alpelisib + fulvestrant group)

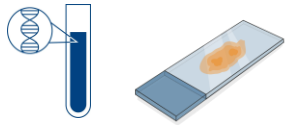
†Shown are treatment-related adverse events of any grade that occurred in at least 20% of the patients in any trial group unless otherwise noted

‡For stomatitis, neutropenia, rash, and hyperglycemia, combined preferred terms are used in the table; if a patient experienced multiple terms, it was counted once for the highest grade.

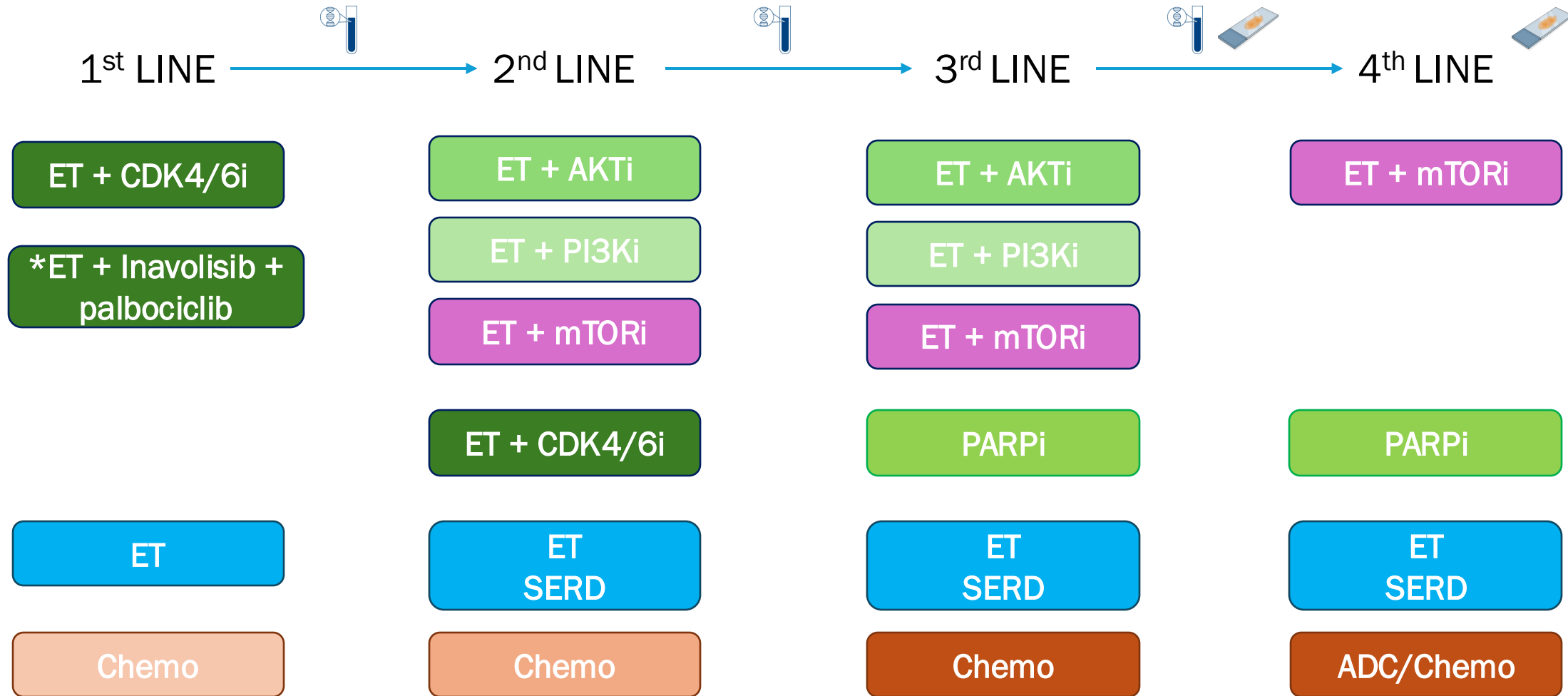
§Additional events of clinical importance

Abbreviations: Alpe, alpelisib; D/C, discontinued; Geda, gedatolisib; IQR, interquartile range; Pts, patients; RDI, relative dose intensity; TRAE, treatment-related adverse event; TR-SAE, treatment-related serious adverse events; tx, treatment

Treatment Paradigm for HR+/HER2– MBC



- NGS – *PIK3CA*, *AKT* pathway, *ESR1*
- Germline
- ER/PR/HER2



*For *PIK3CA* m and those who recur on or within 12 mo of adj ET

Adapted from Komal Jhaveri

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