

# Endometrial cancer: ASCO 2025

BJ Rimel MD

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# Disclosures

- Advisory board participant: Merck, GSK, AstraZeneca, Tempus, Immunogen
- Master Yoda/The mandalorian is/are a bipartisan fictional characters.

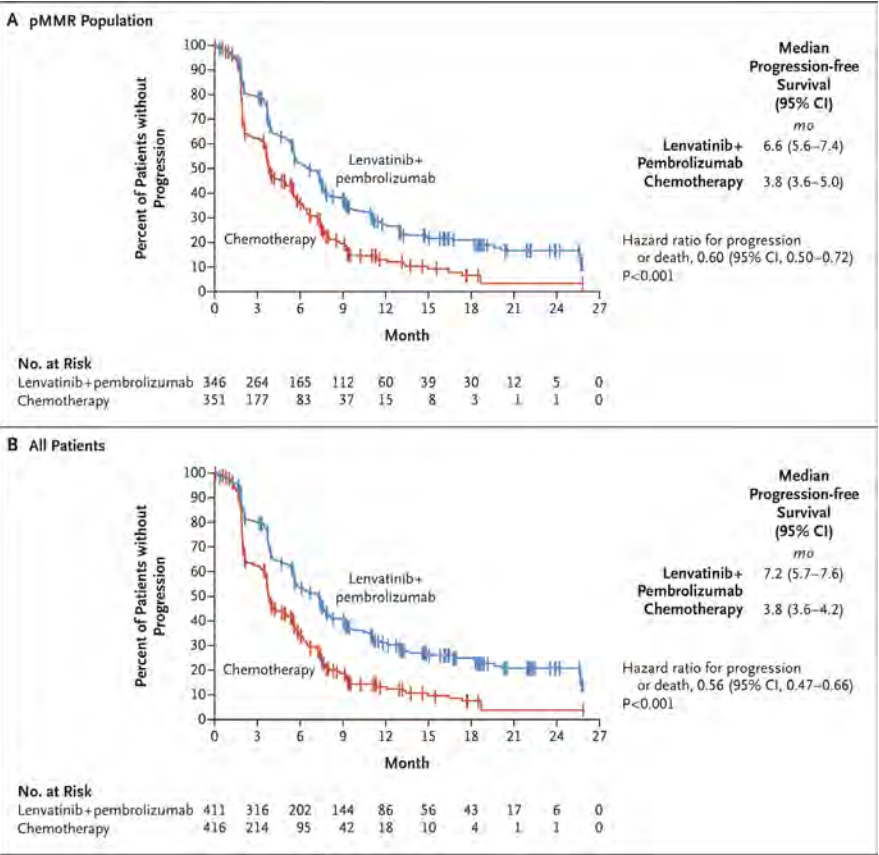
# Key Takeaways

Not a big year for  
endometrial cancer

Adding multi-TKI to  
ICI+chemotherapy  
for first line  
endometrial cancer  
is tolerable and  
should be further  
studied

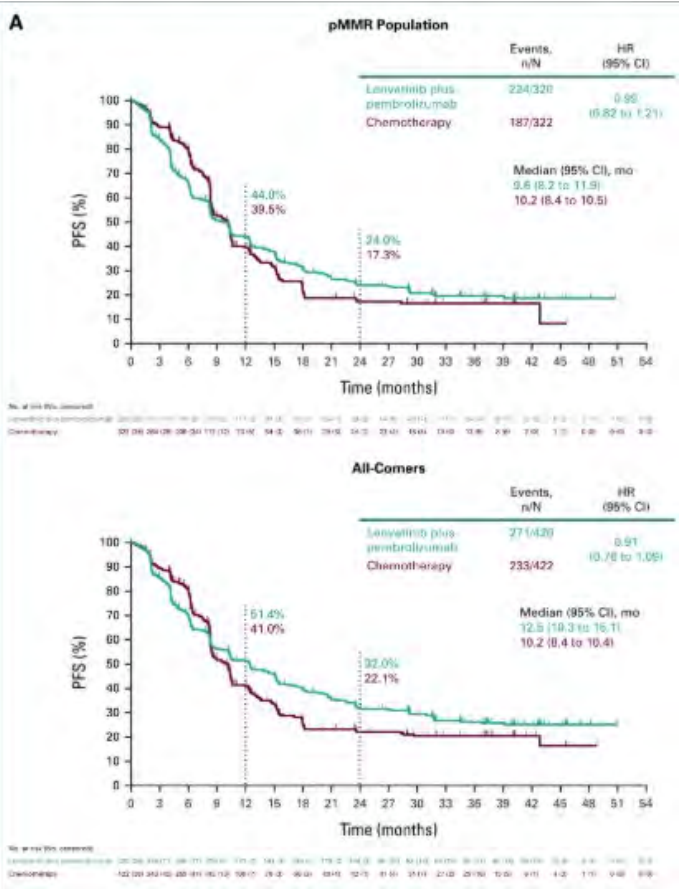
ctDNA is prognostic  
and longitudinal  
follow up is  
predictive of  
progression in  
endometrial cancer

Multi-TKI  
VEGFR/FGFR/PDGF + ICI  
At recurrence=



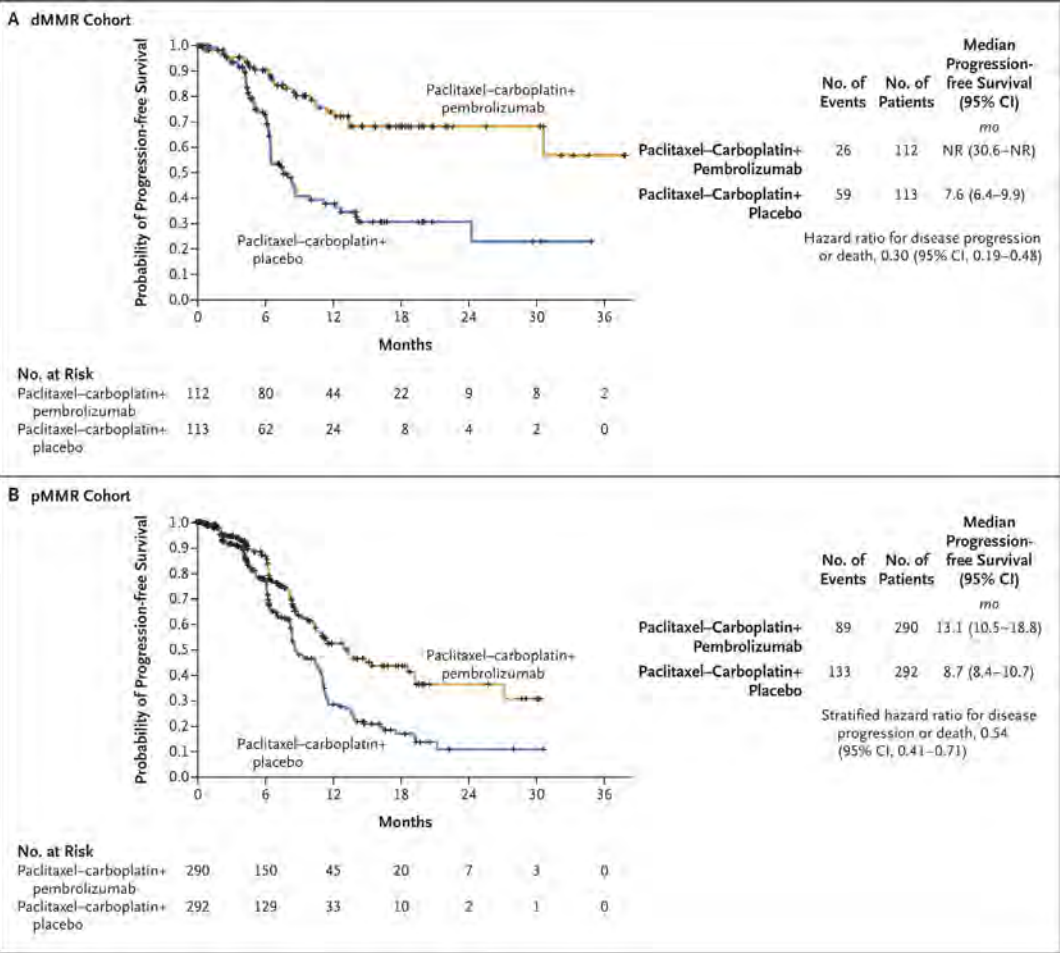
KEYNOTE-775 Makker et al NEJM  
2022  
Improved PFS and OS in  
pMMR and dMMR

Multi-TKI VEGFR/FGFR/PDGF + ICI  
Vs. carbo/taxol chemo  
In first line therapy



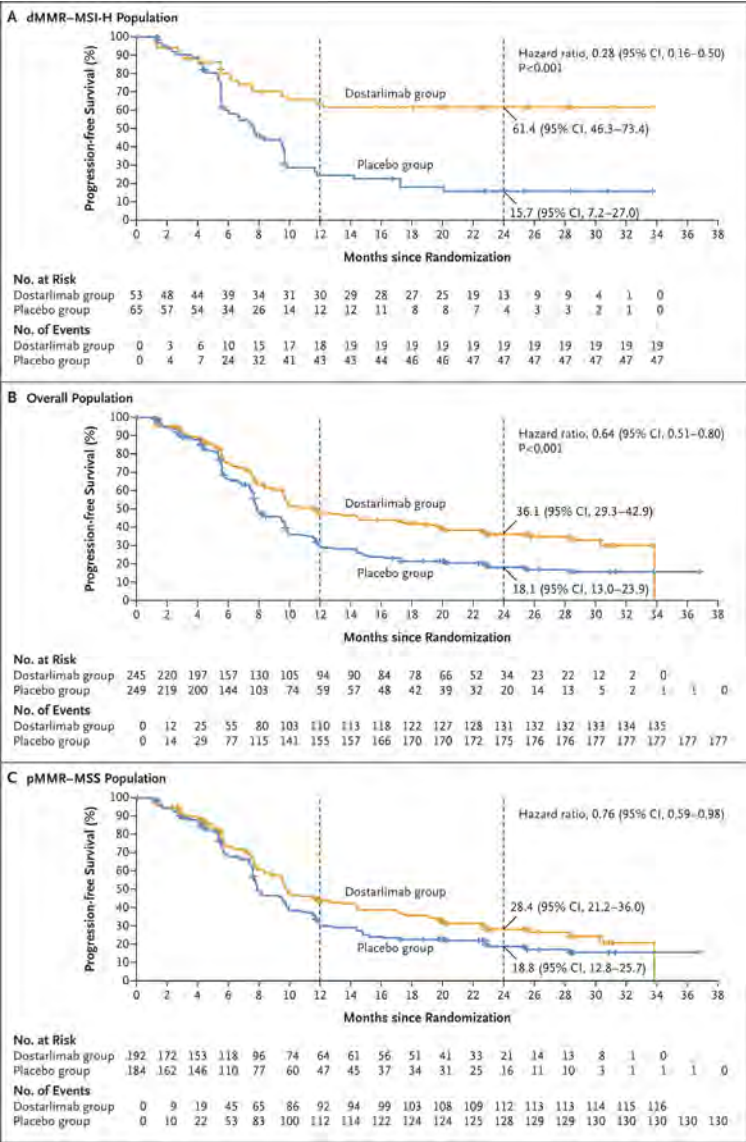
LEAP001 Marth et al JCO 2024  
Improved PFS and in dMMR  
but not pMMR

# Chemotherapy + ICI in First line/recurrent



Gy018 Eskander et al NEJM 2023

Improvement in PFS for both  
dMMR and pMMR



RUBY Mirza et al NEJM 2023

What happens if you  
add a multi-TKI and ICI  
to chemotherapy?





The only main plenary oral on endometrial cancer:

2025 ASCO<sup>®</sup>  
ANNUAL MEETING

PD-L1  
inhibitor

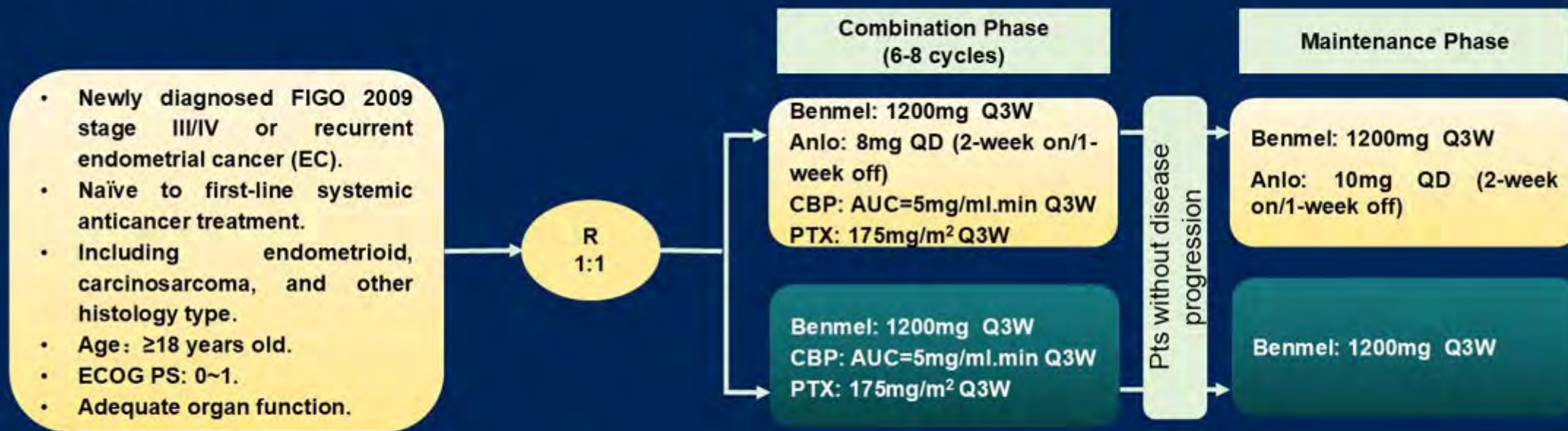
Multi-  
TKI  
VEGFR/  
FGFR/P  
DGE

# Benmelstobart plus carboplatin/paclitaxel with or without anlotinib, followed by maintenance benmelstobart with or without anlotinib, as first-line treatment for advanced or recurrent endometrial cancer: a randomized, open-label, phase II trial

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# Methods



- Primary endpoint: ORR assessed by investigators according to RECIST v1.1.
- Secondary endpoint: OS, PFS, disease control rate (DCR), duration of response (DOR) and safety.
- Stratified by: MMR status (dMMR/MSI-H or pMMR/MSS).



# Baseline Characteristics were well balanced

	Benmel-Anlo (N=38)	Benmel(N=33)
Age, median(range), years	59.0 (37 - 73)	60.0 (43 - 74)
MMR status, n(%)		
dMMR/MSI-H	6 (15.79)	7 (21.21)
pMMR/MSS	32 (84.21)	26 (78.79)
Disease status, n(%)		
Newly diagnosed	11 (28.95)	11 (33.33)
III	1 (2.63)	1 (3.03)
IV	10 (26.32)	10 (30.30)
Recurrent	27 (71.05)	21 (63.64)
ECOG PS, n(%)		
0	12 (31.58)	13 (39.39)
1	25 (65.79)	20 (60.61)
Histology type, n(%)		
Endometrioid	38 (100.00)	31 (93.94)
Carcinosarcoma	0 (0.00)	1 (3.03)
Other	0 (0.00)	1 (3.03)
Previous chemotherapy, n(%)	20 (52.63)	13 (39.39)
Previous radiotherapy, n(%)	18 (47.37)	9 (27.27)
Prior surgery, n(%)	30 (78.95)	24 (72.73)

# Efficacy: ORR/DCR/DOR

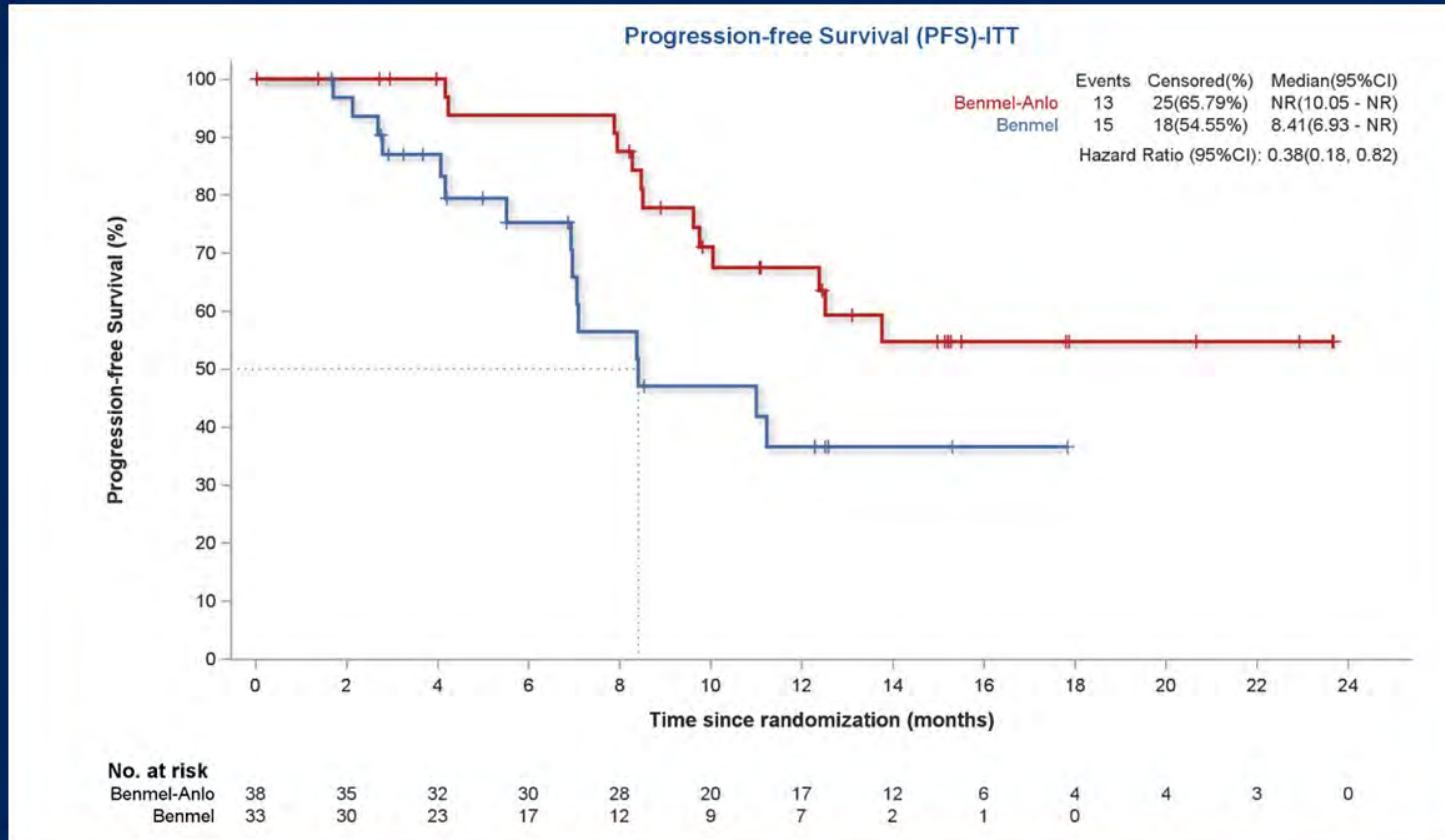
ORR/DCR/DOR compared between the two cohorts

- **Data cutoff date:** November 1, 2024. There were 36 assessable cases in Benmel-Anlo arm and 31 in Benmel arm.
- **ITT population:**
  - **ORR:** 86.1% (Benmel-Anlo) vs 80.6% (Benmel)
  - **DCR:** 100% in both arms
  - **Median DOR:** Not reached (95% CI 8.71–NR) vs 6.97 months (95% CI 4.11–NR)
- **dMMR/MSI-H subpopulation:**
  - **ORR:** 100% (Benmel-Anlo) vs 85.7% (Benmel)
  - **DCR:** 100% in both arms
  - **Median DOR:** Not reached (95% CI 7.23–NR) vs Not reached (95% CI 2.69–NR)
- **pMMR/MSS subpopulation:**
  - **ORR:** 83.3% (Benmel-Anlo) vs 79.2% (Benmel)
  - **DCR:** 100% in both arms
  - **Median DOR:** Not reached (95% CI 6.93–NR) vs 5.75 months (95% CI 2.99–NR)

	ITT		dMMR		pMMR	
	Benmel-Anlo (N=36)	Benmel(N=31)	Benmel-Anlo (N=6)	Benmel(N=7)	Benmel-Anlo (N=30)	Benmel(N=24)
<b>ORR, n (%)</b>	31 (86.1)	25(80.6)	6(100.0)	6(85.7)	25(83.3)	19(79.2)
<b>95% CI</b>	(70.50-95.33)	(62.53-92.55)	(54.07-100.00)	(42.13-99.64)	(65.28-94.36)	(57.85-92.87)
<b>DCR, n (%)</b>	36(100.0)	31(100.0)	6(100.0)	7(100.0)	30(100.0)	24(100.0)
<b>95% CI</b>	(90.26-100.00)	(88.78-100.00)	(54.07-100.00)	(59.04-100.00)	(88.43-100.00)	(85.75-100.00)
<b>mDOR, (95% CI)</b>	NR (8.71-NR)	6.97 (4.11-NR)	NR(7.23-NR)	NR(2.69-NR)	NR(6.93-NR)	5.75(2.99-NR)



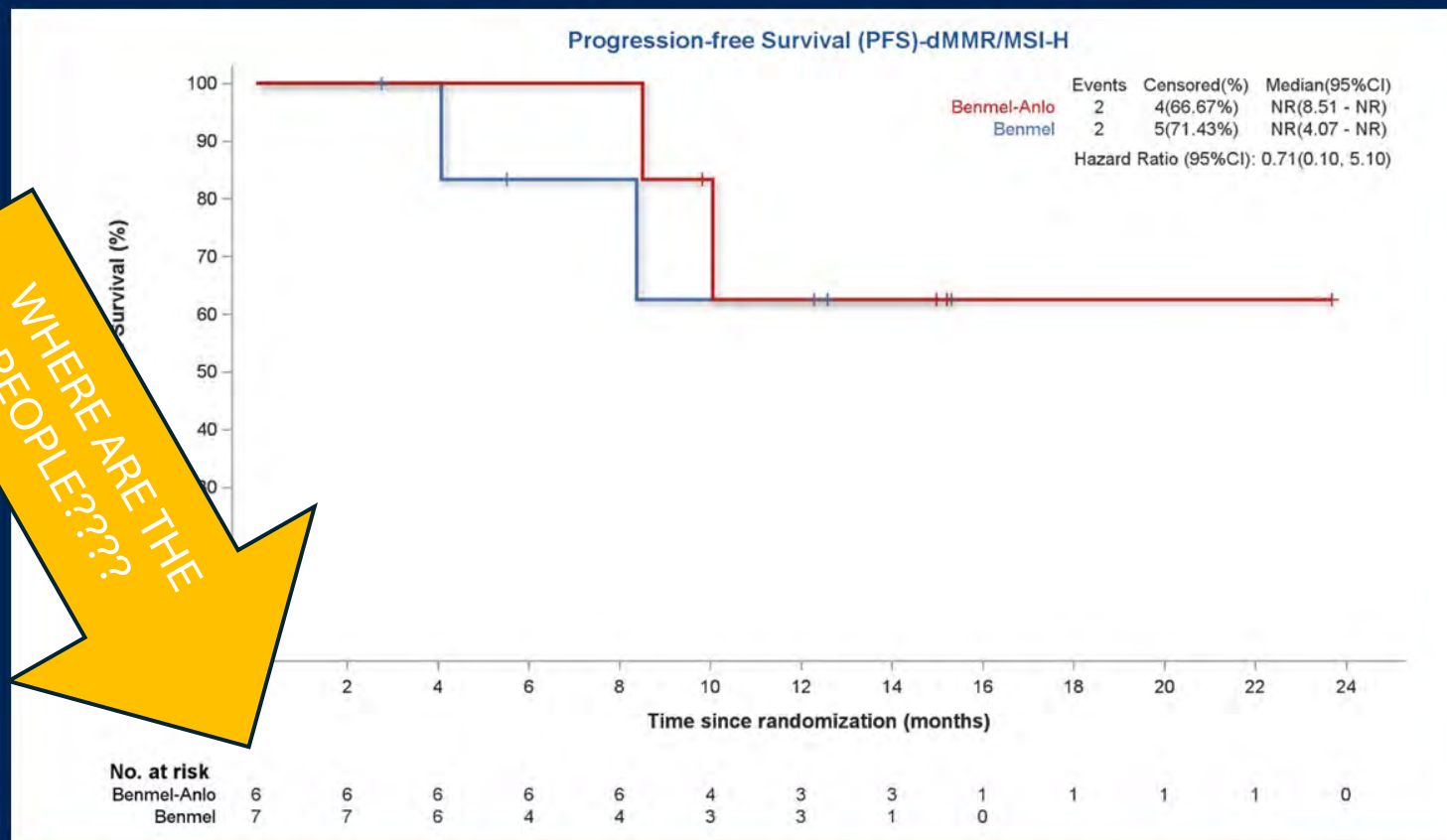
# ITT population: PFS



- **Median follow-up:**
  - 16.2 months (Benmel-Anlo, n=38)
  - 14.2 months (Benmel, n=33)
- **PFS Outcomes:**
  - **Event distribution:** 13/38 (34.2%) vs 15/33 (45.5%).
  - **Benmel-Anlo:** Median PFS **not reached** (95% CI 10.05–NR)
  - **Benmel:** Median PFS **8.41 months** (95% CI 6.93–NR)
  - HR 0.38 (95% CI 0.18-0.82)

PFS Kaplan-Meier survival curves-ITT

# dMMR subpopulation: PFS

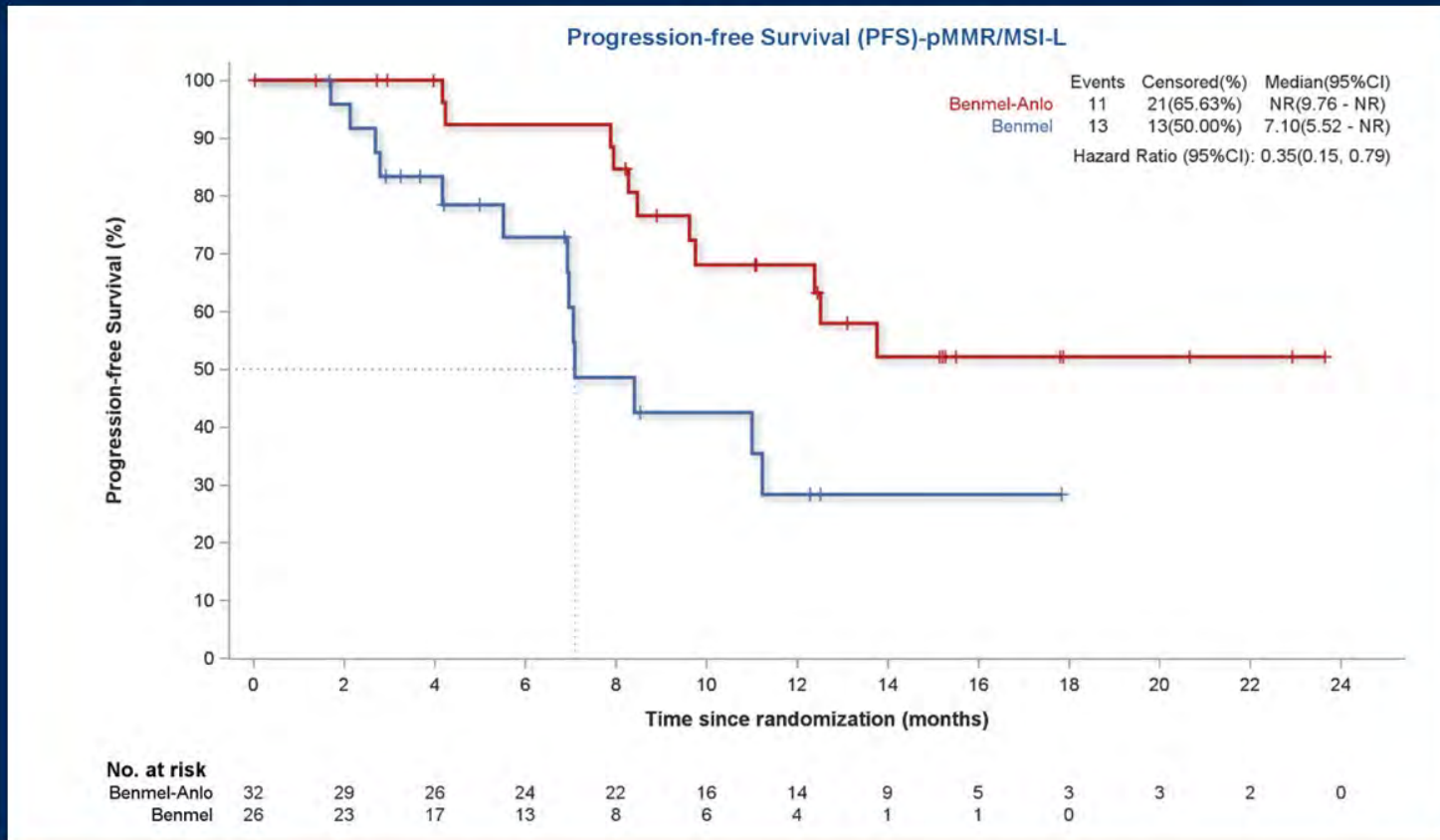


- **dMMR/MSI-H Subpopulation Outcomes**
- **PFS events: 4 total**
  - **Benmel-Anlo: 2/6 (33.3%)**
  - **Benmel: 2/7 (28.6%)**
  - Median PFS not reached in either arm
- **Comparable PFS trends were shown in both cohorts.**

PFS Kaplan-Meier survival curves-dMMR subpopulation



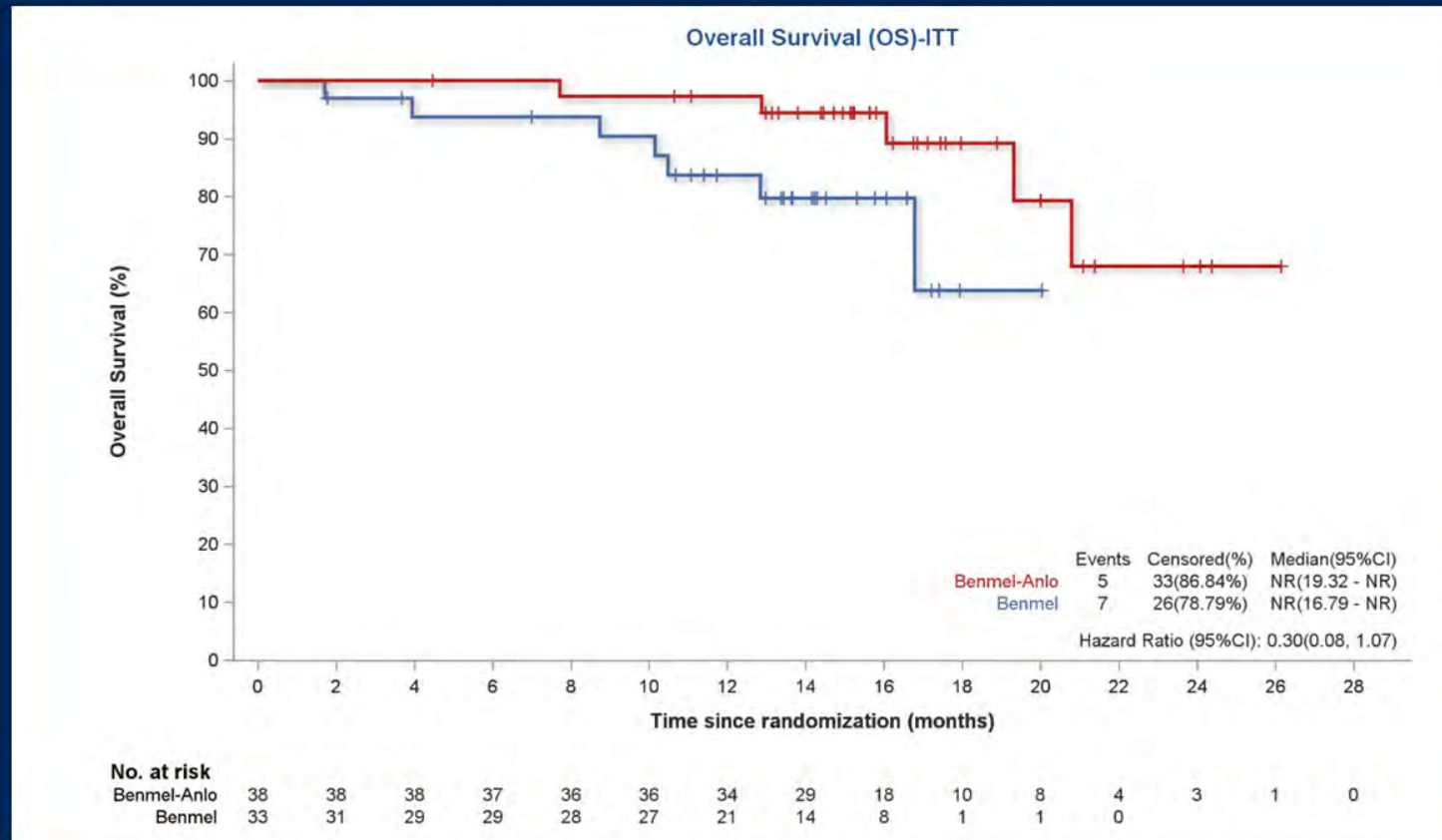
# pMMR subpopulation: PFS



- **pMMR/MSS Subpopulation Outcomes**
- **PFS events: 24 total**
  - **Benmel-Anlo:** 11/32 (28.9%)
  - **Benmel:** 13/26 (39.4%)
- **Median PFS:**
  - **Benmel-Anlo:** Median PFS not reached (95% CI 9.76–NR)
  - **Benmel:** 7.10 months (95% CI 5.52–NR)
  - **PFS:** Notable PFS extension trends were demonstrated, HR 0.35 (95% CI 0.15-0.79).

PFS Kaplan-Meier survival curves-pMMR subpopulation

# Efficacy: OS

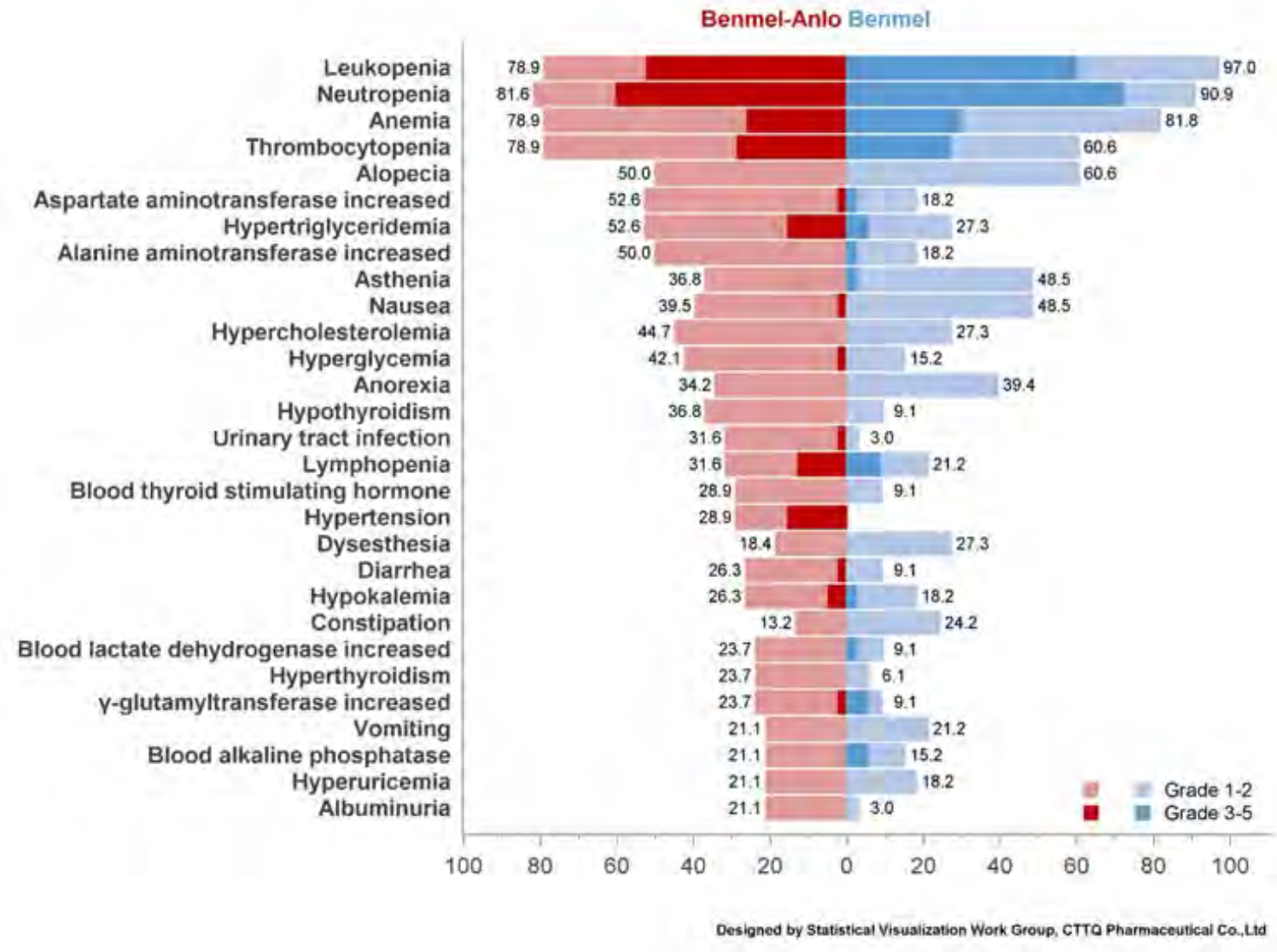


- **OS events (ITT): 10 total**
  - **Benmel-Anlo: 4/38 (10.5%)**
  - **Benmel: 6/33 (18.2%)**
  - Median OS not reached in either arm
- **OS trend favored Benmel-Anlo, HR 0.30 (95% CI 0.08-1.07).**

OS Kaplan-Meier survival curves

# Safety:

Expected worsening of  
bone marrow toxicities  
and liver enzyme  
abnormalities









**I WONDER WHAT'S NEXT?**



makeameme.org



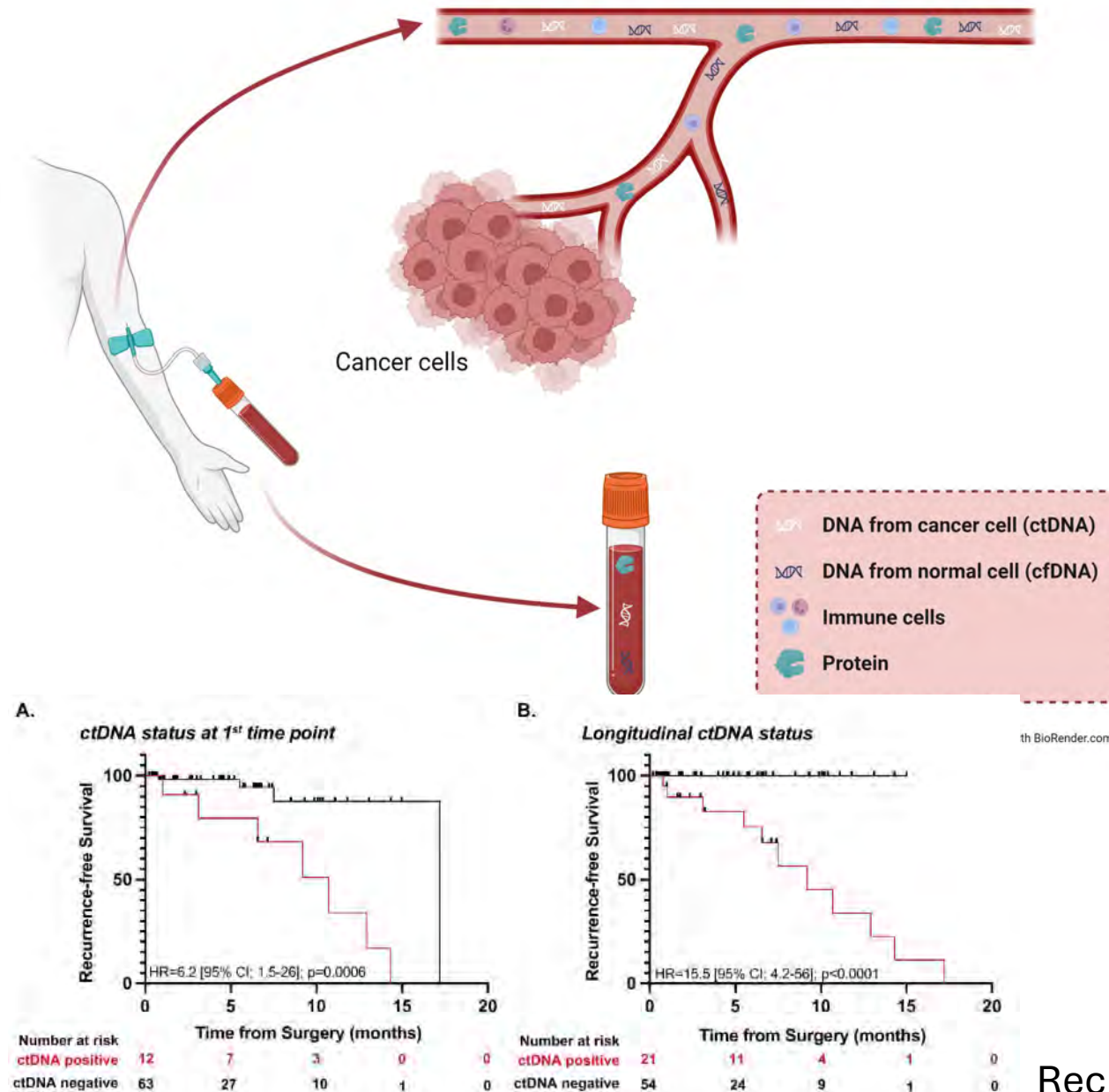
# Circulating Tumor DNA Analysis Guiding Adjuvant Therapy in Stage II Colon Cancer

**Authors:** Jeanne Tie, M.D. , Joshua D. Cohen, M.Phil., Kamel Lahouel, Ph.D. , Serigne N. Lo, Ph.D., Yuxuan Wang, M.D., Ph.D., Suzanne Kosmider, M.B., B.S., Rachel Wong, M.B., B.S. , +23, for the DYNAMIC Investigators\* [Author Info & Affiliations](#)

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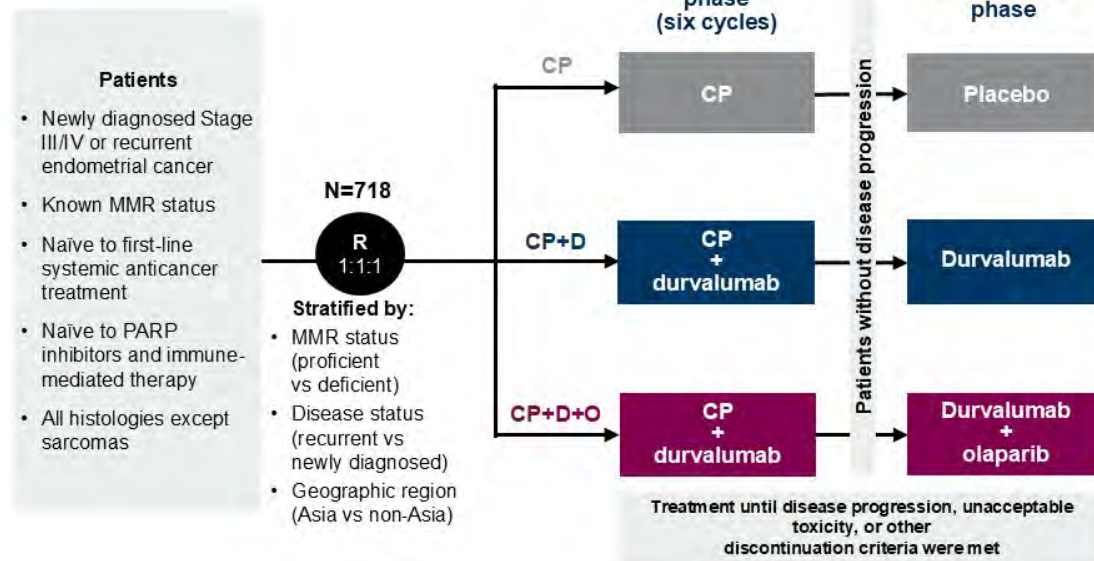
## Does ctDNA collected longitudinally during endometrial cancer treatment predict prognosis?



Recio et al Gyn Onc 2024

# DUO-E met its dual primary endpoints

Randomized, placebo-controlled, double-blind study<sup>1</sup>



## Endpoints

**Primary (ITT):** PFS (RECIST per investigator) in CP+D versus CP and CP+D+O versus CP

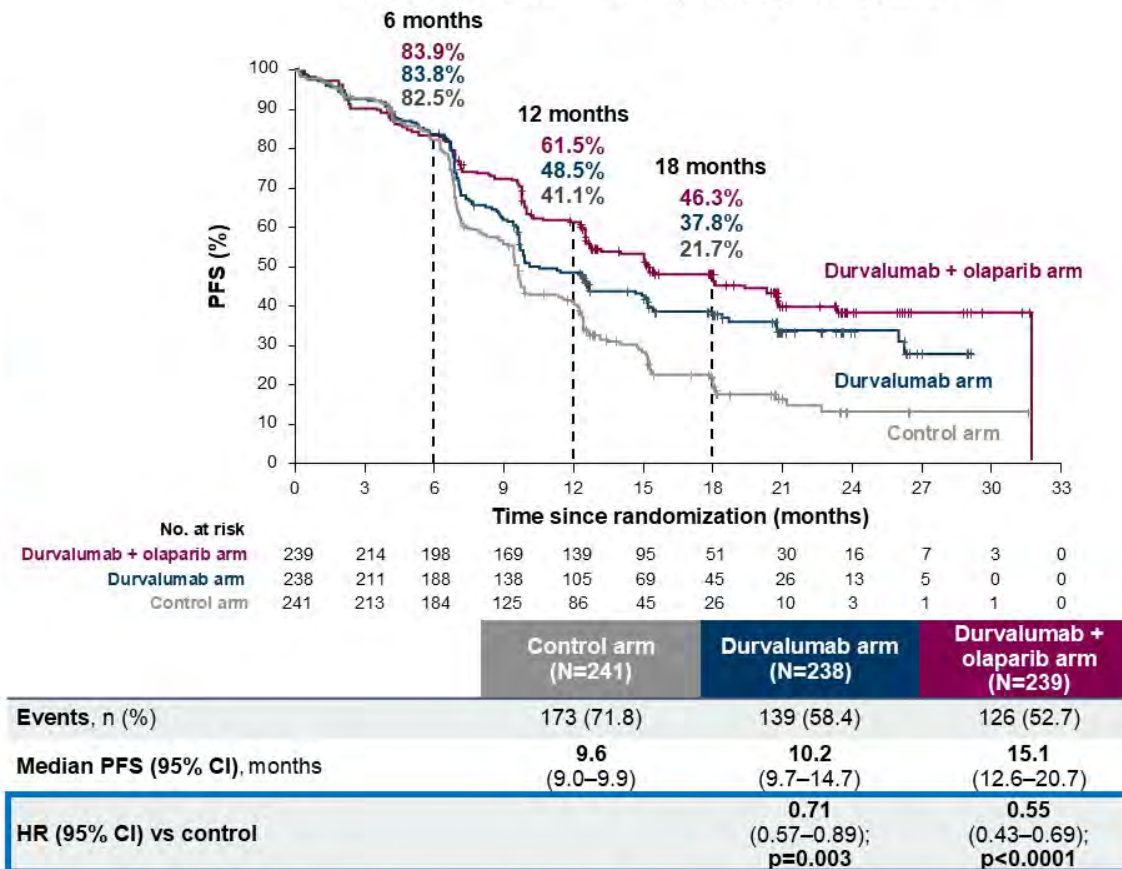
**Secondary (ITT):** OS (key secondary) and safety

**Prespecified exploratory analyses:** subpopulation analyses of PFS by MMR status

CI, confidence interval; CP, carboplatin + paclitaxel; D, durvalumab; HR, hazard ratio; ITT, intent to treat; MMR, mismatch repair; O, olaparib; OS, overall survival; PARP, poly(ADP-ribose) polymerase; PFS, progression-free survival; R, randomization; RECIST, Response Evaluation Criteria in Solid Tumors.

1. Westin SN, et al. *J Clin Oncol* 2024;42:283–99. Kaplan–Meier figure borrowed with permission from Westin SN, et al. Durvalumab plus carboplatin/paclitaxel followed by maintenance durvalumab with or without olaparib as first-line treatment for advanced endometrial cancer: the phase III DUO-E trial. *J Clin Oncol* 2024;42:283–99. <https://ascopubs.org/doi/full/10.1200/JCO.23.02132>. © American Society of Clinical Oncology.

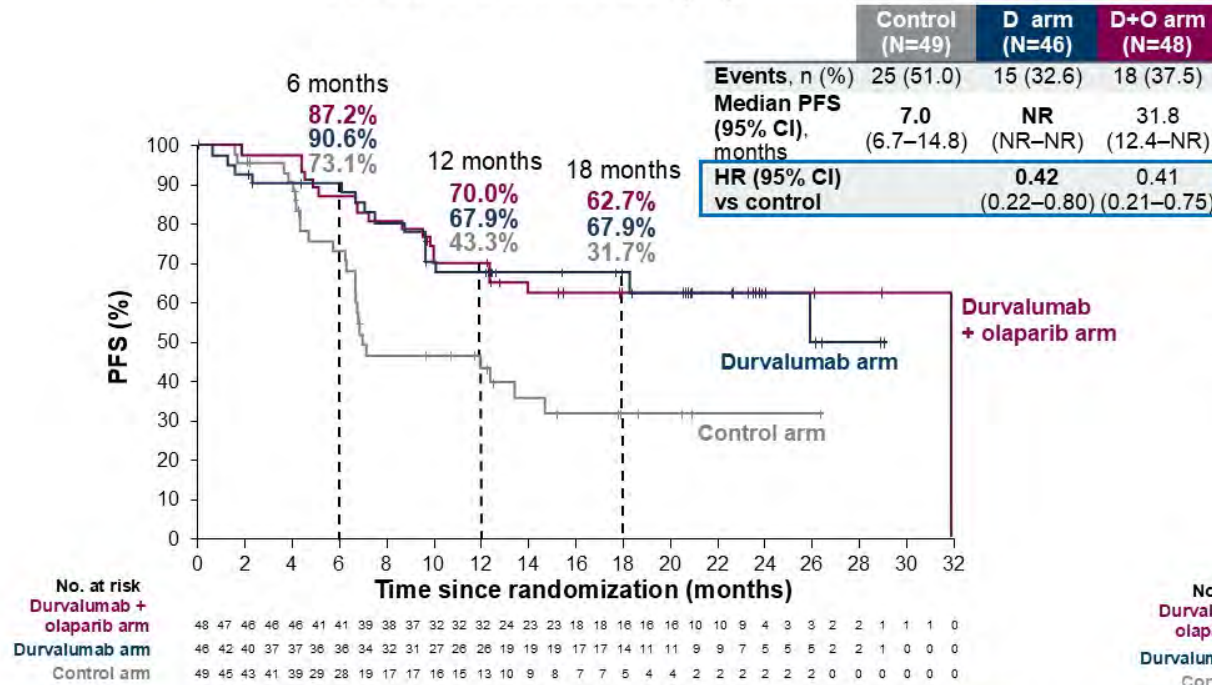
## ITT population: PFS – primary endpoints





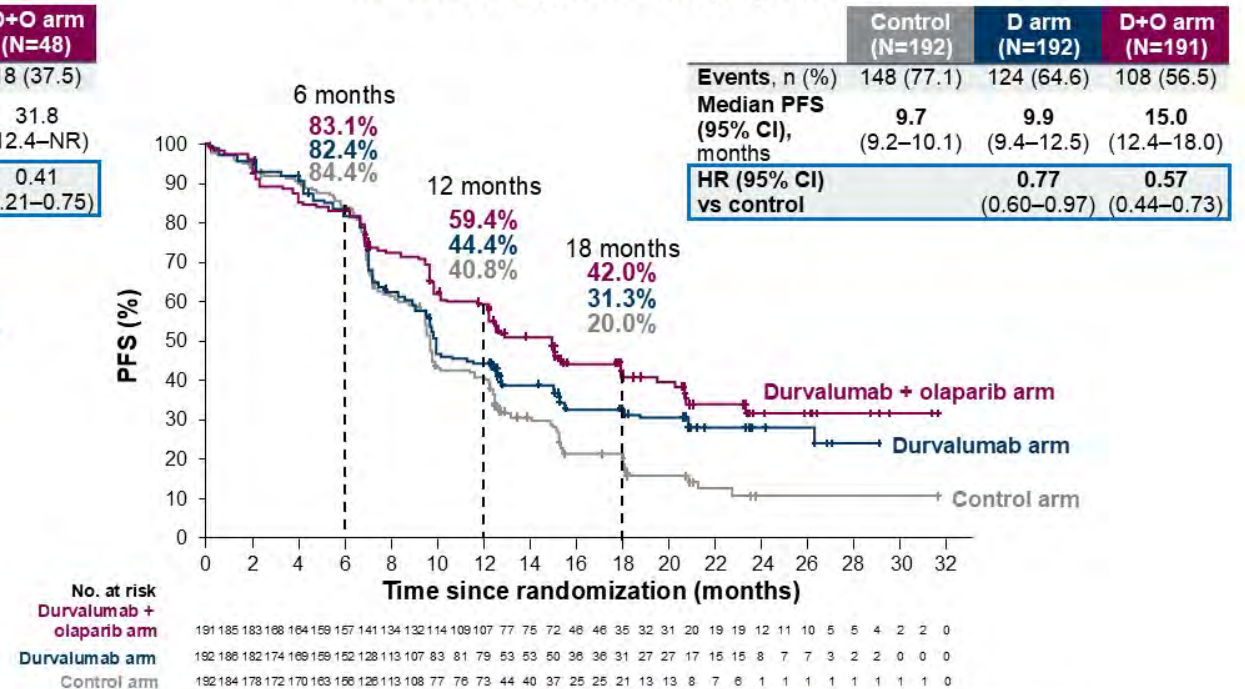
# DUO-E: PFS based on mismatch repair status

PFS in the dMMR subpopulation



➤ The greatest benefit with CP + durvalumab versus CP was in the dMMR subpopulation<sup>1</sup>

PFS in the pMMR subpopulation



➤ In the pMMR subpopulation, the addition of olaparib further enhanced the PFS benefit<sup>1</sup>

## Here, we present post hoc exploratory longitudinal circulating tumor (ct)DNA analyses

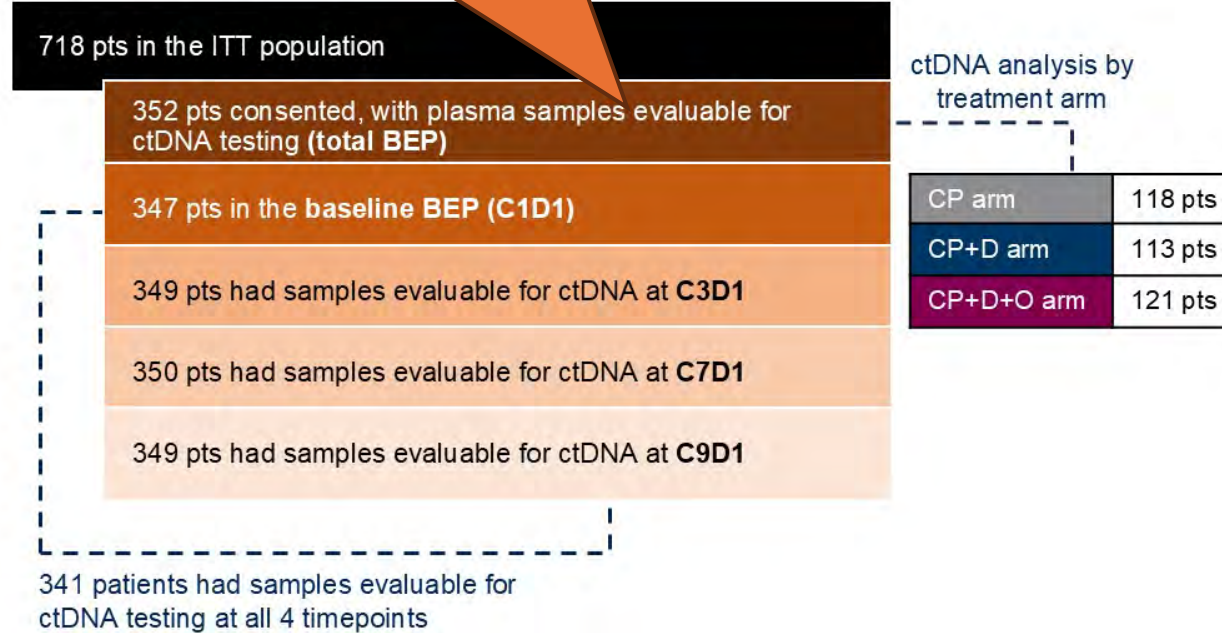
dMMR, mismatch repair deficient; NR, not reported; pMMR, mismatch repair proficient. 1. Westin SN, et al. *J Clin Oncol* 2024;42:283–99. Kaplan–Meier figure borrowed with permission from Westin SN, et al. Durvalumab plus carboplatin/paclitaxel followed by maintenance durvalumab with or without olaparib as first-line treatment for advanced endometrial cancer: the phase III DUO-E trial. *J Clin Oncol* 2024;42:283–99. <https://ascopubs.org/doi/full/10.1200/JCO.23.02132>. © American Society of Clinical Oncology.



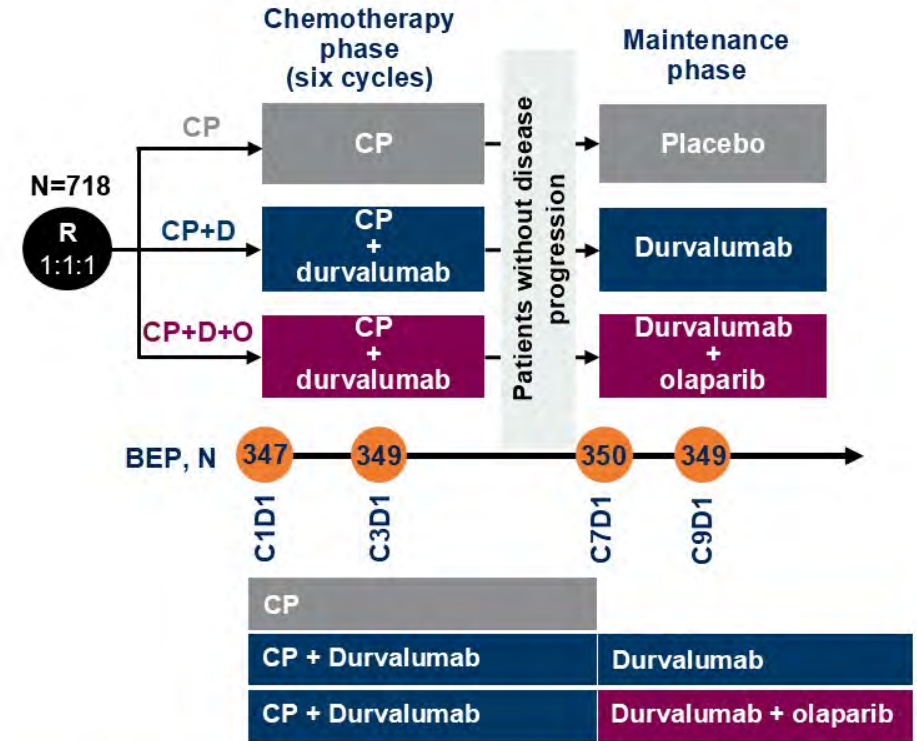
# DUO-E: summary of the biomarker-evaluable population (BEP)

Confusing

## Summary of the BEP



## Study design and ctDNA analysis



- Samples were collected at baseline (C1D1), during the chemotherapy phase (C3D1), prior to maintenance initiation (C7D1), and during the maintenance phase (C9D1)
- ctDNA was analyzed using the methylation-based Guardant Infinity™ assay (Guardant Health, Palo Alto, CA)

C, cycle; D, day; pts, patients.



# DUO-E ctDNA analysis: baseline characteristics

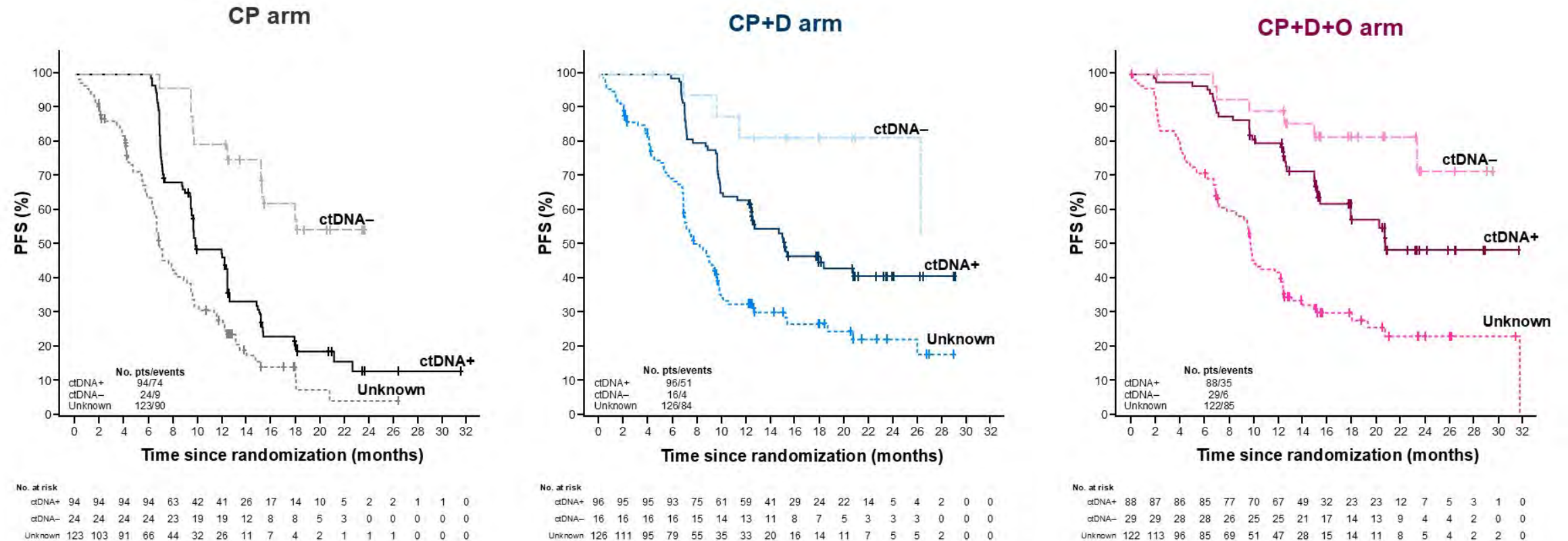
Characteristics were generally comparable between BEP and ITT populations

		ITT (N=718)			BEP (N=352)		
		CP (n=241)	CP+D (n=238)	CP+D+O (n=239)	CP (n=118)	CP+D (n=113)	CP+D+O (n=121)
<b>Age, years</b>	Median (range)	64 (31–85)	64 (22–84)	63 (27–86)	64 (36–85)	64 (28–78)	64 (29–84)
<b>MMR status, n (%)</b>	dMMR	49 (20)	46 (19)	48 (20)	14 (12)	23 (20)	28 (23)
	pMMR	192 (80)	192 (81)	191 (80)	104 (88)	90 (80)	93 (77)
<b>ctDNA status, n (%)</b>	ctDNA+	94 (39)	96 (40)	88 (37)	94 (80)	96 (85)	88 (73)
	ctDNA–	24 (10)	16 (7)	29 (12)	24 (20)	16 (14)	29 (24)
	Unknown	123 (51)	126 (53)	122 (51)	0 (0)	1 (1)	4 (3)
<b>Disease type, n (%)</b>	Newly diagnosed	115 (48)	113 (48)	114 (48)	56 (48)	60 (53)	65 (54)
	Recurrent	126 (52)	125 (53)	125 (52)	62 (53)	53 (47)	56 (46)
<b>Region, n (%)</b>	Asia	68 (28)	68 (29)	67 (28)	34 (29)	33 (29)	36 (30)
	Rest of the world	173 (72)	170 (71)	172 (72)	84 (71)	80 (71)	85 (70)
<b>ECOG, n (%)</b>	Normal activity	156 (65)	156 (66)	166 (70)	88 (75)	84 (74)	92 (76)
	Restricted activity	85 (35)	81 (34)	73 (31)	30 (25)	29 (26)	29 (24)

Proportions of patients for each characteristic may not sum to 100%, as percentages are presented rounded to whole numbers which may have resulted in rounding discrepancies  
ECOG, Eastern Cooperative Oncology Group.

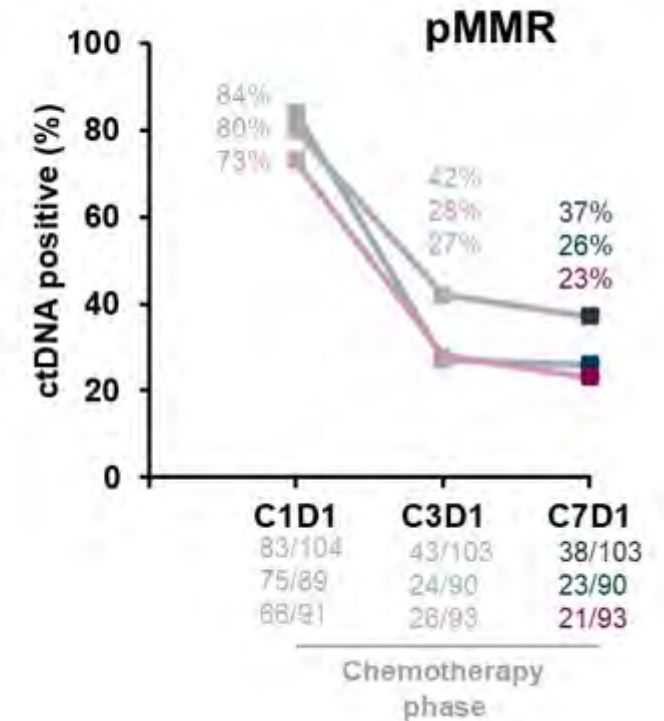
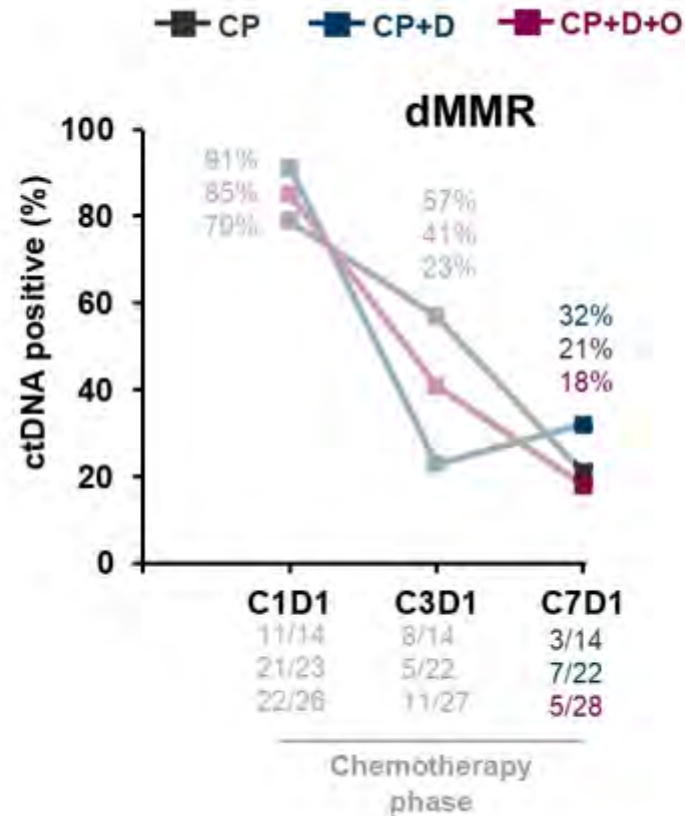
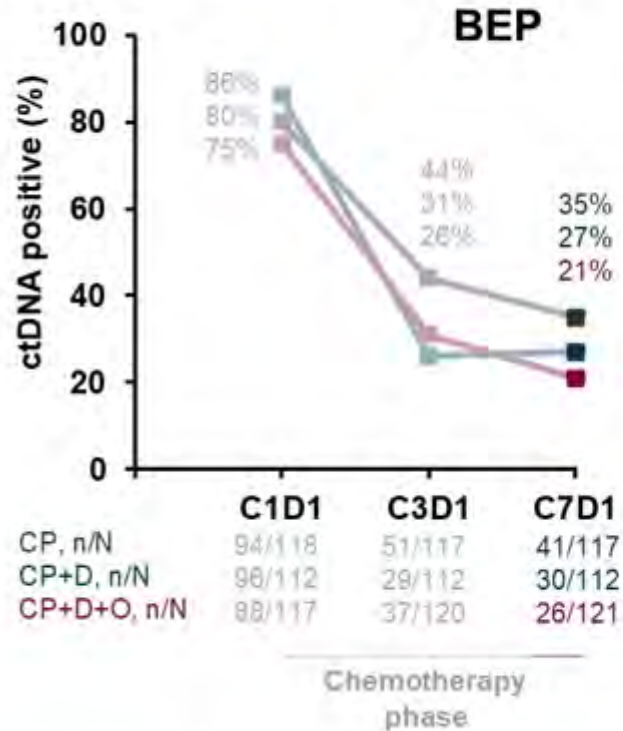
# DUO-E: PFS rate by treatment and baseline ctDNA status in the ITT population

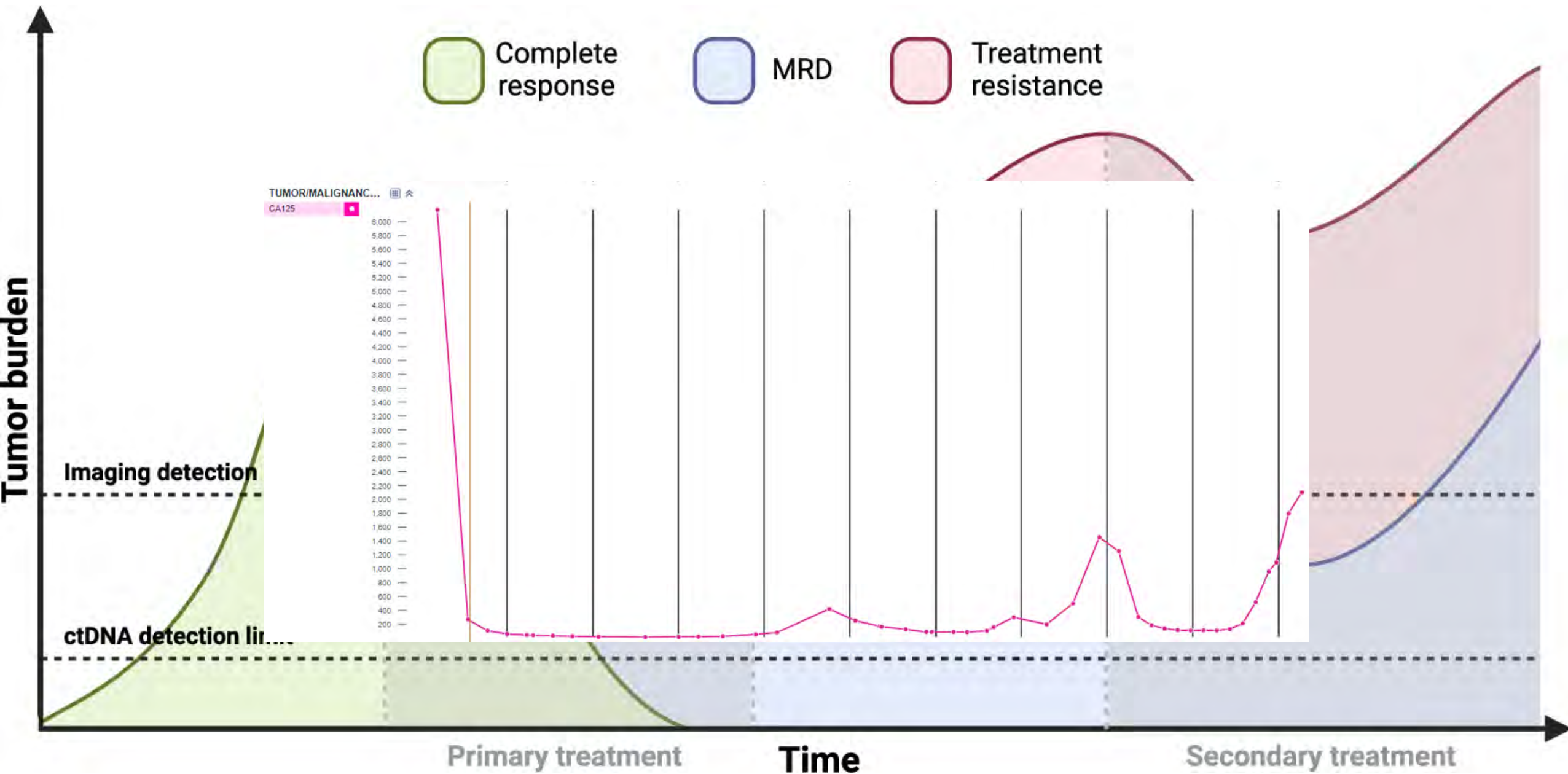
Baseline ctDNA positivity was associated with higher risk of progression across treatment arms





# Treatment results in reduction of ctDNA in all groups and all types of therapy

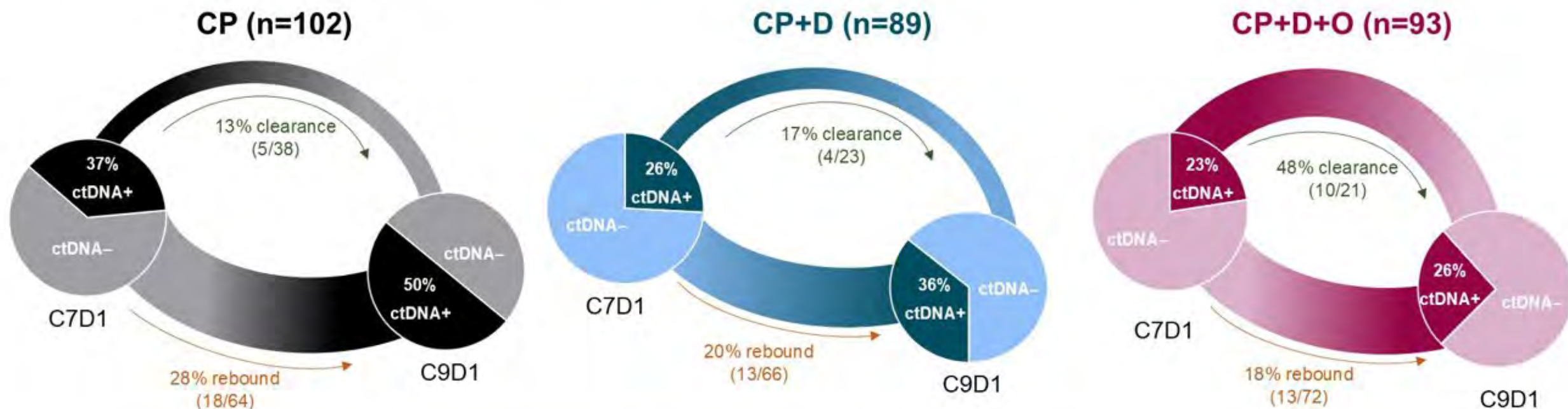






# DUO-E: durvalumab and olaparib mediated ctDNA changes during the maintenance phase (C7D1–C9D1) in pMMR patients

Addition of olaparib may be driving novel anti-tumor activity in pMMR tumors not seen with durvalumab alone



- Durvalumab led to 4% more clearance of ctDNA and 8% less rebound, vs CP arm
- Addition of olaparib to durvalumab led to 35% more clearance of ctDNA and 10% less rebound, vs CP arm

Next step is to see the correlation between rebound and progression on imaging.

ME TRYING TO REMEMBER ALL THE  
NAMES OF THE DRUGS LIKE I DID  
WHEN I TOOK BOARDS





# Phase 2 study of letrozole, abemaciclib and metformin in estrogen receptor (ER) positive, recurrent endometrial cancer (EC)

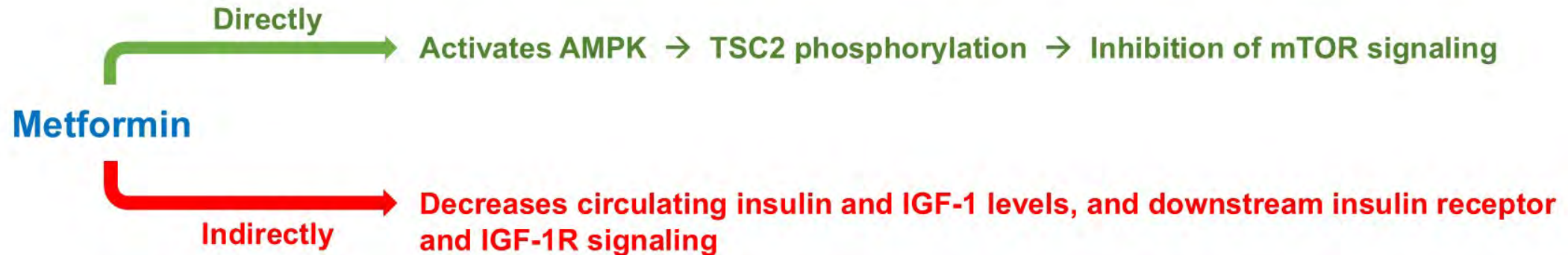
**Panagiotis A. Konstantinopoulos**, Ningxuan Zhou, Richard T. Penson, Susana Campos, Carolyn Krasner, Alexi A. Wright, Rebecca Porter, Neil Horowitz, Sara Boubberhan, Hannah Sawyer, Lani Koppermann, Martin Hayes, Madeline Polak, Meghan Shea, Page Widick, Su-Chun Cheng, Cesar Castro, Ursula A. Matulonis, Elizabeth K. Lee



# Rationale for combined ER, CDK4/6 and PI3K inhibition in EC

- Previous studies have demonstrated promising activity of combined hormonal therapy and CDK4/6 inhibition in ER positive endometrioid EC\*
- ctDNA sequencing at the time of progression through letrozole/abemaciclib demonstrated frequent acquired PI3K pathway alterations suggesting that there is a **strong selective pressure to activate the PI3K pathway upon exposure to combined aromatase and CDK4/6 inhibition** in EC\*\*
- Preclinical studies have demonstrated **significant synergism with simultaneous inhibition** of the ER, CDK4/6 and PI3K pathways\*\*\*

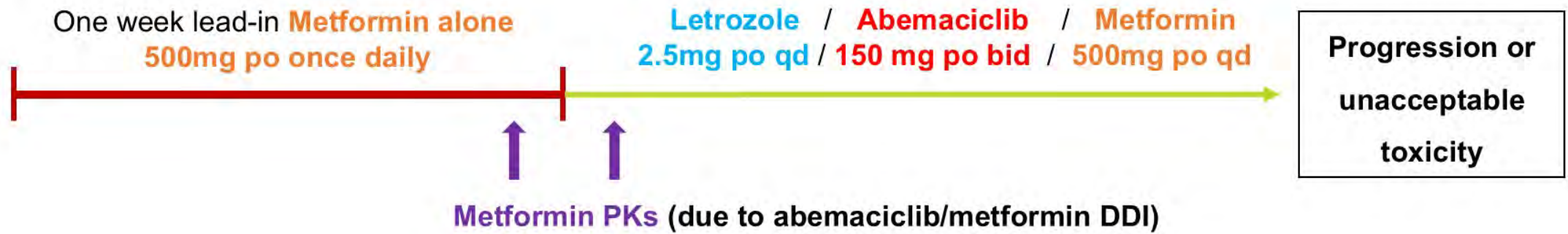
# Metformin inhibits PI3K pathway signaling



- Window of opportunity (WOO) studies in endometrial cancer have demonstrated that metformin at a dose of 850mg orally daily decreases phospho-AKT and phospho-S6rp in endometrial cancer tissue samples as well as decreases circulating insulin and IGF-1 levels\*
- Based on these considerations, we hypothesized that PI3K inhibition using metformin may further enhance the activity of letrozole/abemaciclib in endometrial cancer



# Treatment Schema / Trial Design



DESIGN: Two Primary Endpoints (ORR and PFS6)

Target Accrual: 25 patients

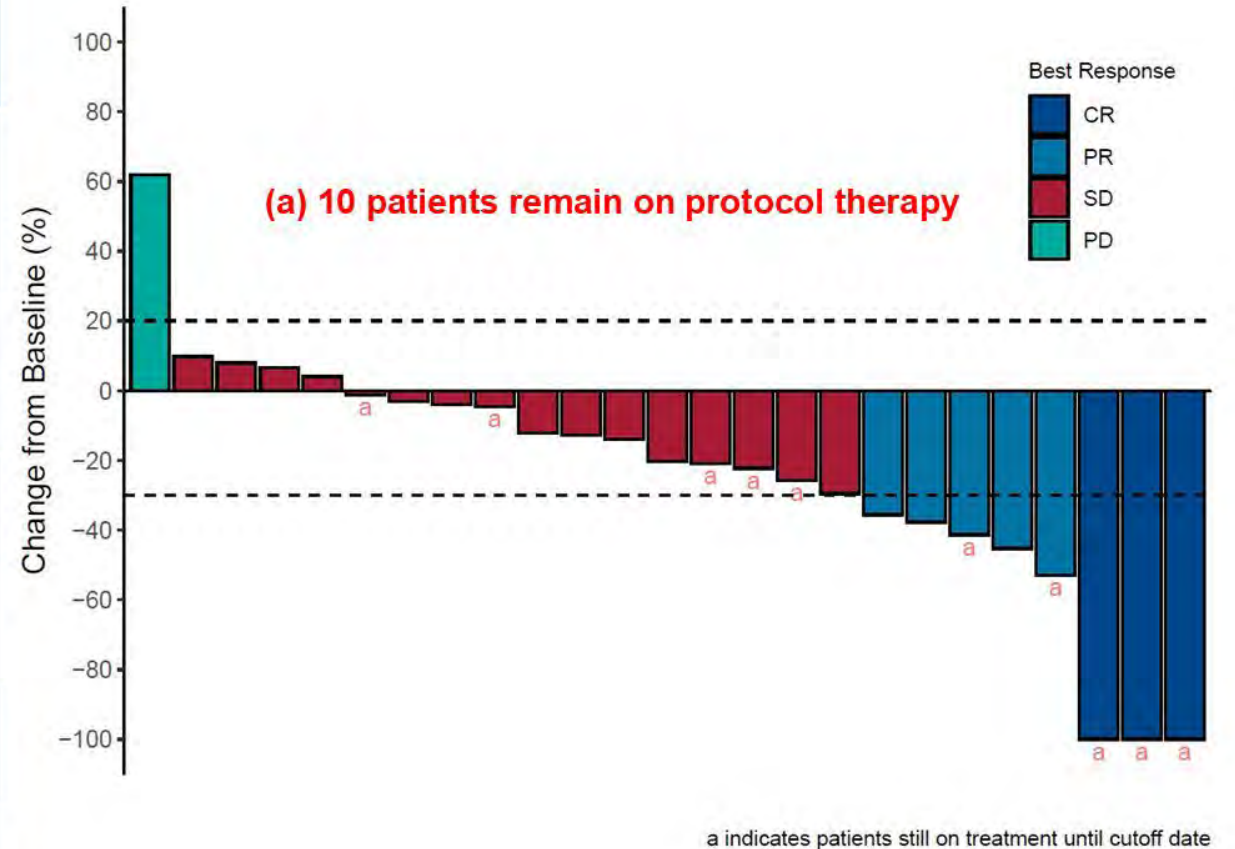
- If  $\geq 6$  patients exhibit OR, lower bound of binomial 90% CI exceeds 10%
- If  $\geq 9$  patients exhibit PFS6, lower bound of binomial 90% CI exceeds 20%



<b><u>PATIENT CHARACTERISTICS</u></b> <b><u>(n=25)</u></b>	
<b>AGE</b>	
Median	64.2 (49.7 – 84.2) years
<b>RACE</b>	
Black or African American	2 (8%)
Other	3 (12%)
White	20 (80%)
<b>GRADE</b>	
1	13 (52%)
2	8 (32%)
3	4 (16%)
<b>PRIOR HORMONAL THERAPY</b>	
Yes	18 (72%)
No	7 (28%)
<b>PRIOR SYSTEMIC THERAPIES</b>	
Median	2 (0 – 8)

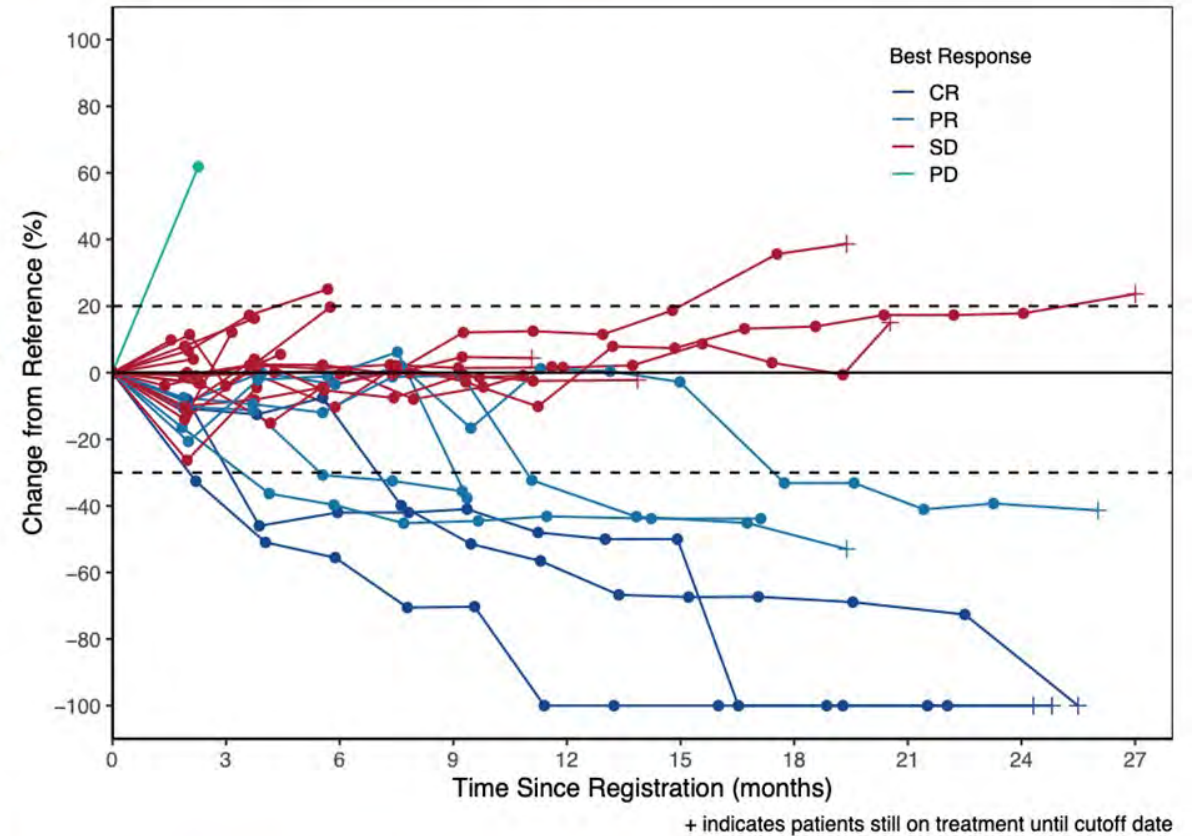
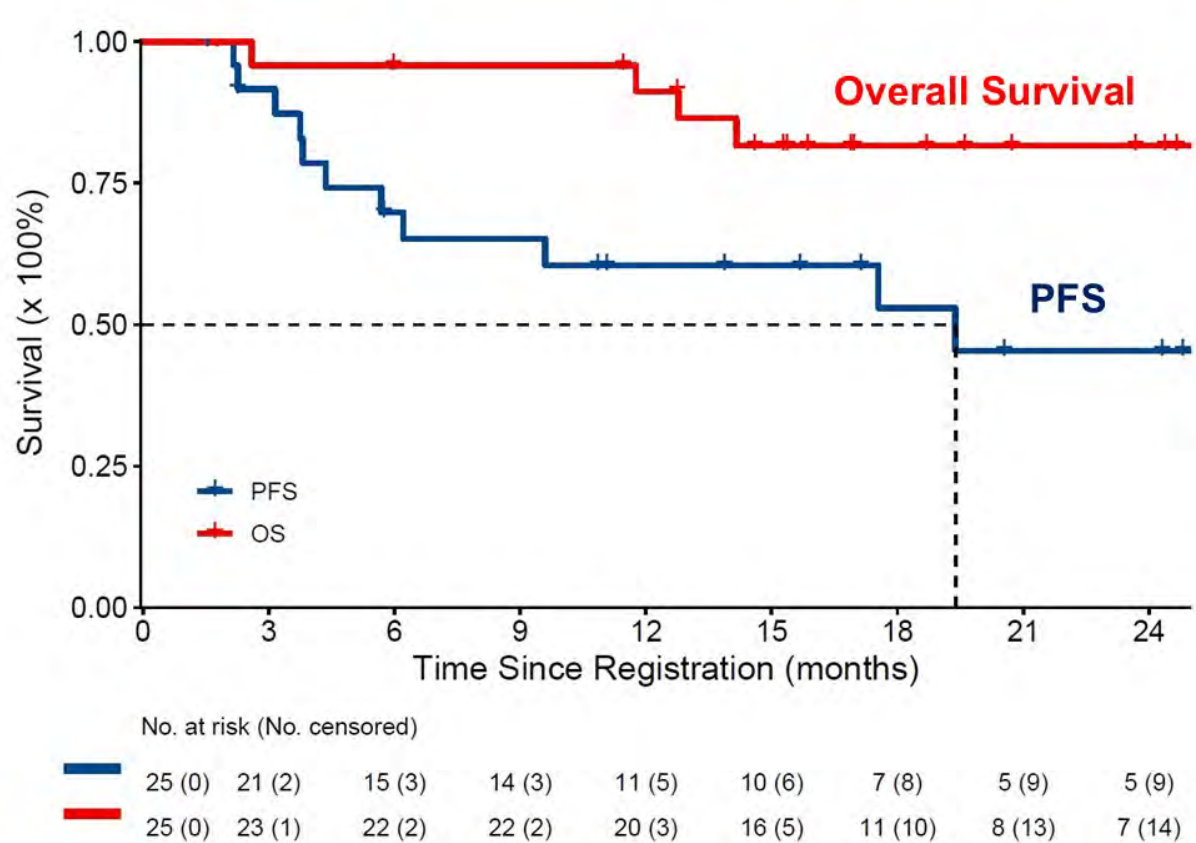
# Objective Response Rate (ORR)

RESPONSE	Overall (N=25) n (%)
Complete Response (CR)	3 (12%) (1 unconfirmed CR but confirmed PR)
Partial Response (PR)	5 (20%) (1 unconfirmed)
Stable Disease (SD) ≥ 6 months	7 (28%)
SD < 6 months	9 (36%)
Progressive Disease	1 (4%)
<b>ORR</b>	<b>8 (32%)</b>





# Progression Free Survival (PFS)



**Median PFS 19.4 months (median follow-up time 18.7 months)**  
**Kaplan Meier estimate of PFS6: 69.8% (95% CI: 46.9% to 84.3%)**



# Treatment Related Adverse Events (top 10 ranked by # G3+)

N=25 patients	Grade 1	Grade 2	Grade 3
<b>Decreased neutrophil count</b>	3(12%)	7(28%)	<b>6(24%)</b>
<b>Fatigue</b>	7(28%)	7(28%)	<b>4(16%)</b>
<b>Anemia</b>	6(24%)	10(40%)	<b>2(8%)</b>
<b>Increased aspartate aminotransferase</b>	4(16%)	0(0%)	<b>2(8%)</b>
Decreased platelet count	10(40%)	1(4%)	1(4%)
Increased alanine aminotransferase	3(12%)	0(0%)	1(4%)
Hepatic infection	0(0%)	0(0%)	1(4%)
Hypermagnesemia	0(0%)	0(0%)	1(4%)
Hypertension	0(0%)	0(0%)	1(4%)
<b>Diarrhea</b>	<b>13(52%)</b>	<b>3(12%)</b>	0(0%)

# Treatment Related Adverse Events (top 10 ranked by # G3+)

N=25 patients	Grade 1	Grade 2	Grade 3
Decreased neutrophil count	3(12%)	7(28%)	<b>6(24%)</b>
Fatigue	7(28%)	7(28%)	<b>4(16%)</b>
Anemia	6(24%)	10(40%)	<b>2(8%)</b>
Inc	<b>No patients discontinued protocol therapy for toxicity</b>		<b>2(8%)</b>
			1(4%)
			1(4%)
			1(4%)
Hepatic infection	0(0%)	0(0%)	1(4%)
Hypermagnesemia	0(0%)	0(0%)	1(4%)
Hypertension	0(0%)	0(0%)	1(4%)
Diarrhea	<b>13(52%)</b>	<b>3(12%)</b>	0(0%)



# Molecular Profiling

- **4 TP53 mutated** and **21 NSMP tumors**, (no MMRD, no *POLE* mutated)
- Of the **21 NSMP tumors**, **5 had RB1 or CCNE1 alterations**; such alterations have been previously associated with *de novo* or acquired resistance to CDK4/6 inhibition as they facilitate G1->S phase transition without dependence on CDK4/6

	NSMP without <i>CCNE1</i> and <i>RB</i> alterations (N=16)	NSMP with <i>CCNE1</i> or <i>RB</i> alterations (N=5)	<i>TP53</i> -mutated (N=4)
Complete Response	3 (18.8%)	0 (0%)	0 (0%)
Partial Response	5 (31.3%)	0 (0%)	0 (0%)
Stable Disease >= 6 months	6 (37.5%)	0 (0%)	1 (25.0%)
Stable Disease < 6 months	2 (12.5%)	5 (100%)	2 (50.0%)
Progressive Disease	0 (0%)	0 (0%)	1 (25.0%)
<b>Objective Response</b>	<b>8 (50%)</b>	<b>0 (0%)</b>	<b>0 (0%)</b>



# Significant correlations with ORR and clinical benefit rate

	Objective Response			Clinical Benefit*		
	Yes	No	p value**	Yes	No	p value**
<b>Molecular Subtype</b>			<b>0.056</b>			<b>0.002</b>
NSMP without <i>RB1/CCNE1</i> alterations	8 (50.0%)	8 (50.0%)		14 (87.5%)	2 (12.5%)	
NSMP with <i>RB1/CCNE1</i> alterations	0 (0.0%)	5 (100.0%)		0 (0.0%)	5 (100.0%)	
<i>TP53</i> mutated	0 (0.0%)	4 (100.0%)		1 (25.0%)	3 (75.0%)	
<b><i>CTNNB1</i> mutations</b>			<b>0.194</b>			<b>0.018</b>
Present (n=10)	5 (50.0%)	5 (50.0%)		9 (90.0%)	1 (10.0%)	
Absent (n=15)	3 (20.0%)	12 (80.0%)		6 (40.0%)	9 (60.0%)	

\* Objective response or being progression free ≥6 months after initiation of therapy

\*\* Two-sided Fisher Exact test

# Conclusions / Key Takeaways

- Addition of metformin to letrozole/abemaciclib is **feasible and tolerable** and appears to **induce deeper and more prolonged responses (including complete responses)** than letrozole/abemaciclib alone
- Tumor profiling revealed several mechanistically relevant candidate predictors of response (**CTNNB1** mutations) or absence of response (**TP53/RB1/CCNE1** alterations) which require independent validation
- Responses were observed **regardless of PrgR expression** or **prior receipt of hormonal therapy**
- PK analyses suggest that the **500mg metformin once daily dose** is **sufficient to facilitate PI3K pathway inhibition** based on previous metformin window of opportunity studies in endometrial cancer

Thank you

