Society for Immunotherapy of Cancer

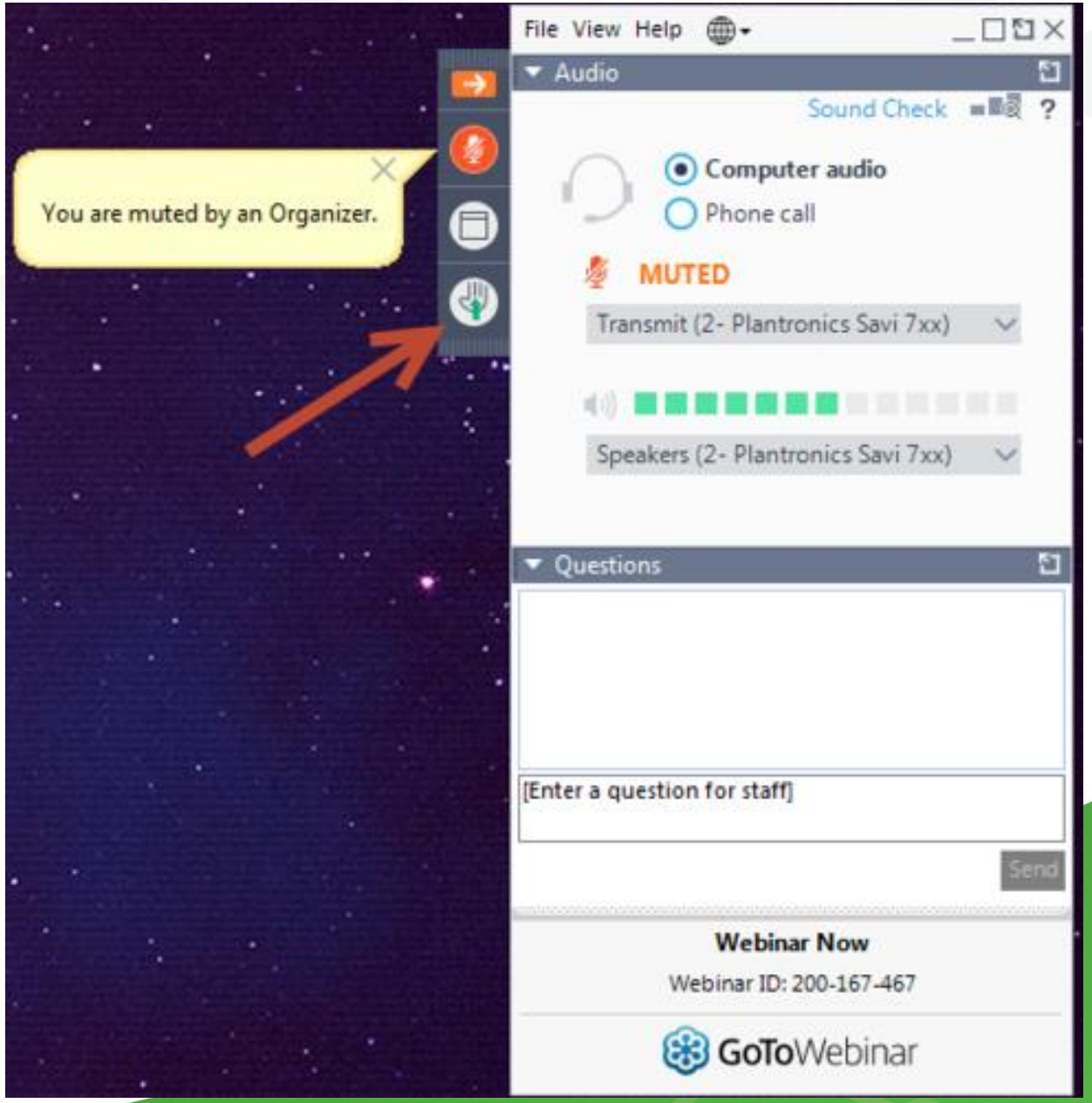
Welcome to the Advances in Cancer Immunotherapy™ Webinar Series – Updates from the Field: Clinical Updates from ESMO Immuno-Oncology Congress 2018

Thursday, February 14, 2019

5-6 p.m. CST

Welcome to the Advances in Cancer Immunotherapy™ Webinar Series: Updates from the Field

Raise your hand if…



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Webinar Agenda

5:00-5:05 p.m. CST	Welcome and Introductions
5:05-5:40 p.m. CST	Clinical Updates from ESMO IO Congress 2018
5:40-5:55 p.m. CST	Question and Answer Session
5:55-6:00 p.m. CST	Closing Remarks

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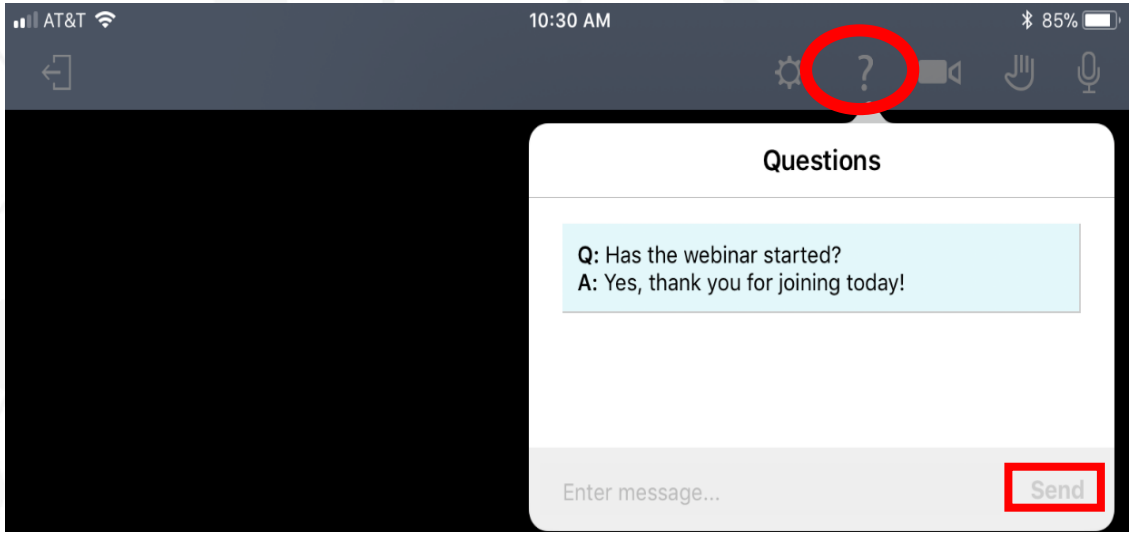
Question and Answer

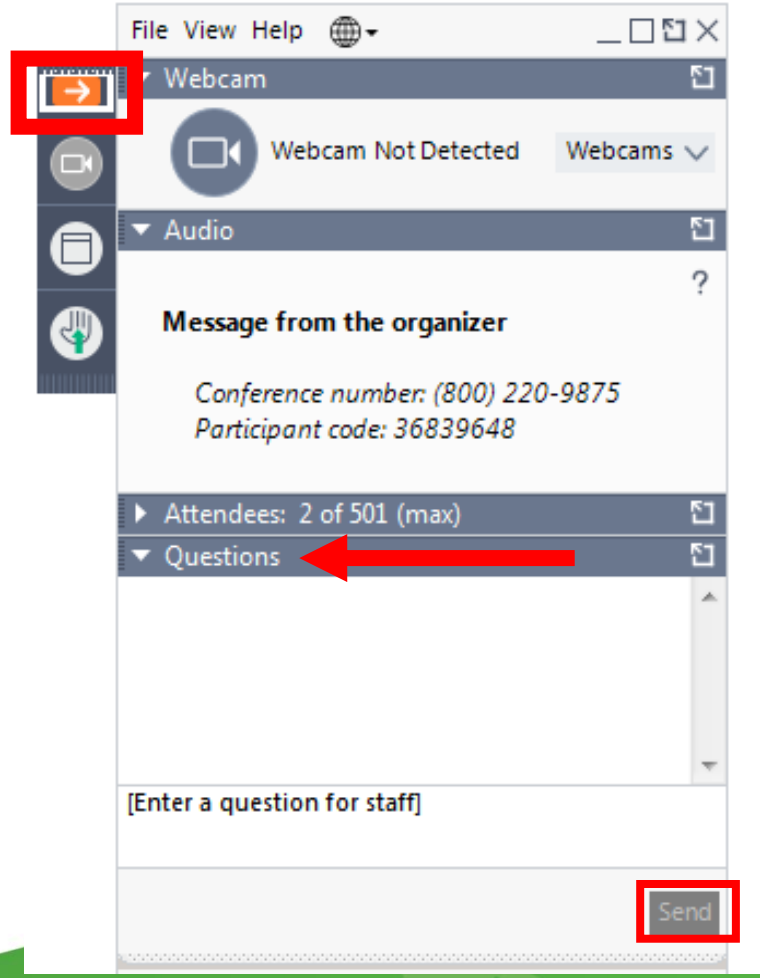
To submit a question:

Type your question in the Questions box of your webinar panel.

Mobile View



Desktop View



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Disclaimer

Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this webinar is not meant to serve as a guideline for patient management. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested in this webinar should not be used by clinicians without evaluation of their patient's conditions and possible contraindications and/or dangers in use, review of any applicable manufacturer's product information, and comparison with recommendations of other authorities.

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Webinar Faculty

May Cho, MD
UC Davis Comprehensive Cancer Center

Terence Rhodes, MD, PhD
Intermountain Healthcare

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Updates from the Field – 2018 ESMO IO Congress

Outline

- FDA approvals
  - Review IMpower150
- ESMO-Immuno-Oncology Congress 2018 clinical trials
  - Therapeutic Clinical trials
    - Checkmate 331
    - IMpower 133
    - MYSTIC
  - Subgroup analysis
    - MYSTIC
    - Abx and PPI in OAK and POPLAR
    - Fast progression in OAK

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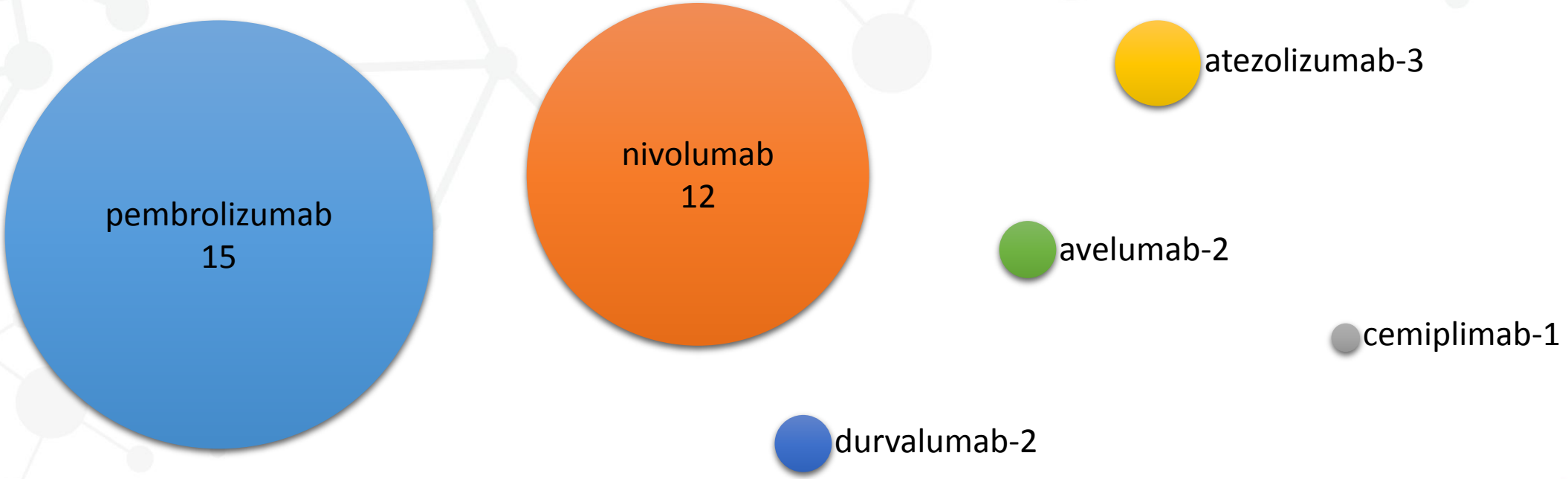
Number of FDA indications for checkpoint inhibitors



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FDA approvals since Oct 2018

- Pembolizumab
  - Locally advanced or metastatic Merkel cell carcinoma
  - First line treatment of metastatic squamous NSCLC in combination with carboplatin and either paclitaxel or nab-paclitaxel
  - Post sorafenib hepatocellular carcinoma

- Atezolizumab
  - Non-squamous, NSCLC in combination with carboplatin, paclitaxel, bevacizumab

Atezolizumab for First-Line Treatment of Metastatic Nonsquamous NSCLC

M.A. Socinski, R.M. Jotte, F. Cappuzzo, F. Orlandi, D. Stroyakovskiy, N. Nogami, D. Rodríguez-Abreu, D. Moro-Sibilot, C.A. Thomas, F. Barlesi, G. Finley, C. Kelsch, A. Lee, S. Coleman, Y. Deng, Y. Shen, M. Kowanetz, A. Lopez-Chavez, A. Sandler, and M. Reck, for the IMpower150 Study Group*

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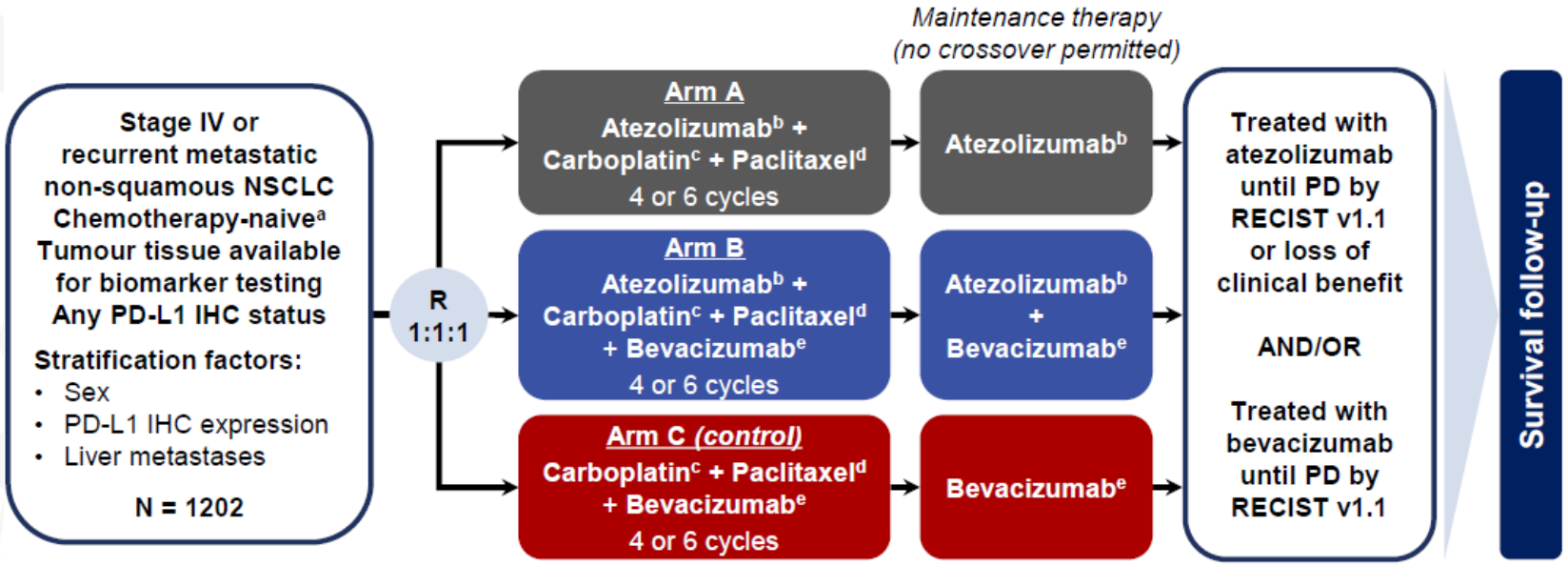
June 14, 2018
N Engl J Med 2018; 378:2288-2301
DOI: 10.1056/NEJMoa1716948

IMpower150 study design



The principal question is to assess whether the addition of atezolizumab to Arm C provides clinical benefit

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Reck, ESMO Immuno-Oncology Congress 2017

Table 1. Baseline Characteristics of All Enrolled Patients (Intention-to-Treat Population).*

Characteristic	ABCP Group (N=400)	BCP Group (N=400)
Median age (range) — yr	63 (31–89)	63 (31–90)
Age group — no. (%)		
<65 yr	215 (53.8)	226 (56.5)
65–74 yr	149 (37.2)	132 (33.0)
75–84 yr	33 (8.2)	39 (9.8)
≥85 yr	3 (0.8)	3 (0.8)
Male sex — no. (%)	240 (60.0)	239 (59.8)
Liver metastases absent at enrollment — no. (%)	347 (86.8)	343 (85.8)
Race or ethnic group — no. (%)†		
White	322 (80.5)	335 (83.8)
Asian	56 (14.0)	46 (11.5)
Black	3 (0.8)	12 (3.0)
American Indian or Alaska Native	3 (0.8)	1 (0.2)
Multiple	3 (0.8)	0
Unknown	13 (3.2)	6 (1.5)
ECOG performance-status score — no./total no. (%)‡		
0	159/397 (40.1)	179/397 (45.1)
1	238/397 (59.9)	218/397 (54.9)
History of tobacco use — no. (%)		
Never	82 (20.5)	77 (19.2)
Current	90 (22.5)	92 (23.0)
Previous	228 (57.0)	231 (57.8)
Nonsquamous histologic subtype — no. (%)		
Adenocarcinoma	378 (94.5)	377 (94.2)
Other§	19 (4.8)	17 (4.2)
Unknown or not assessed	3 (0.8)	6 (1.5)
EGFR mutation status — no. (%)¶		
Positive	35 (8.8)	45 (11.3)
Negative	352 (88.0)	345 (86.3)
EML4-ALK rearrangement status — no. (%)‖		
Positive	13 (3.2)	21 (5.2)
Negative	383 (95.8)	375 (93.8)
KRAS mutation status — no. (%)**		
Positive	47 (11.8)	38 (9.5)
Negative	59 (14.8)	77 (19.2)

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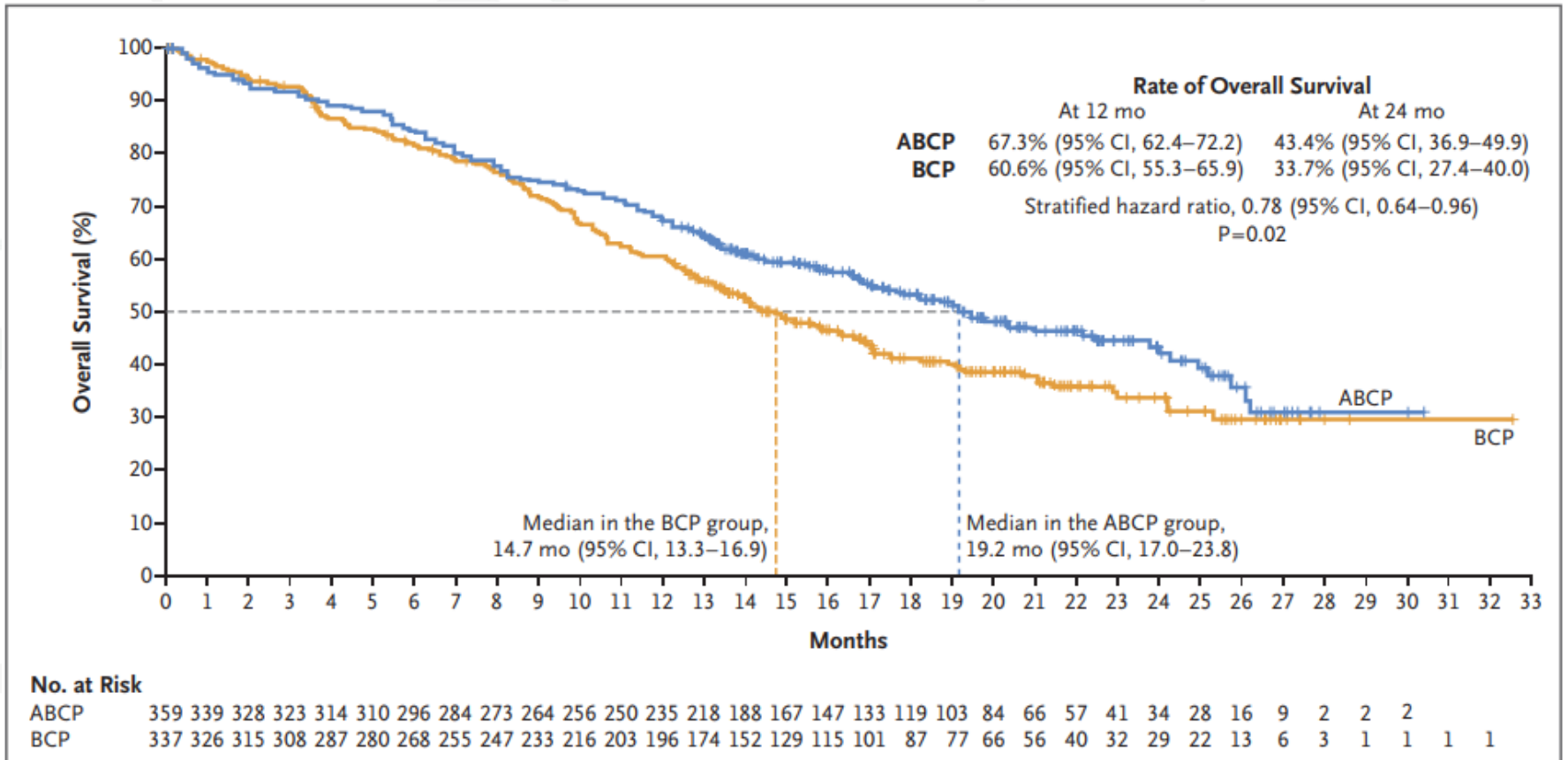

Figure 3. Interim Analysis of Overall Survival in the ABCP Group and the BCP Group.

Shown are Kaplan–Meier estimates of overall survival among the patients in the WT population. The date of data cutoff was January 22, 2018. At the earlier cutoff date of September 15, 2017, four patients were initially reported as having an *EGFR* mutation or an *ALK* translocation and were later confirmed to have WT genotype; this has been corrected in the analysis with the data cutoff at January 22, 2018.

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B **Hazard Ratios for Disease Progression or Death in Biomarker Subgroups**

Population	No. of Patients (%)	Median Progression-free Survival (mo)		Hazard Ratio (95% CI)
		ABCP	BCP	
ITT population	800 (100)	8.3	6.8	0.61 (0.52–0.72)
Patients with *EGFR* or *ALK* genetic alternations	108 (14)	9.7	6.1	0.59 (0.37–0.94)
WT population	692 (87)	8.3	6.8	0.62 (0.52–0.74)
PD-L1 subgroups (in the WT population)				
TC3 or IC3	135 (20)	12.6	6.8	0.39 (0.25–0.60)
TC1/2/3 or IC1/2/3	354 (51)	11.0	6.8	0.50 (0.39–0.64)
TC1/2 or IC1/2	224 (32)	8.3	6.6	0.56 (0.41–0.77)
TC0/1/2 and IC0/1/2	557 (80)	8.0	6.8	0.68 (0.56–0.82)
TC0 and IC0	338 (49)	7.1	6.9	0.77 (0.61–0.99)
Teff subgroups (in the WT population)				
High gene-signature expression	284 (43)	11.3	6.8	0.51 (0.38–0.68)
Low gene-signature expression	374 (57)	7.3	7.0	0.76 (0.60–0.96)

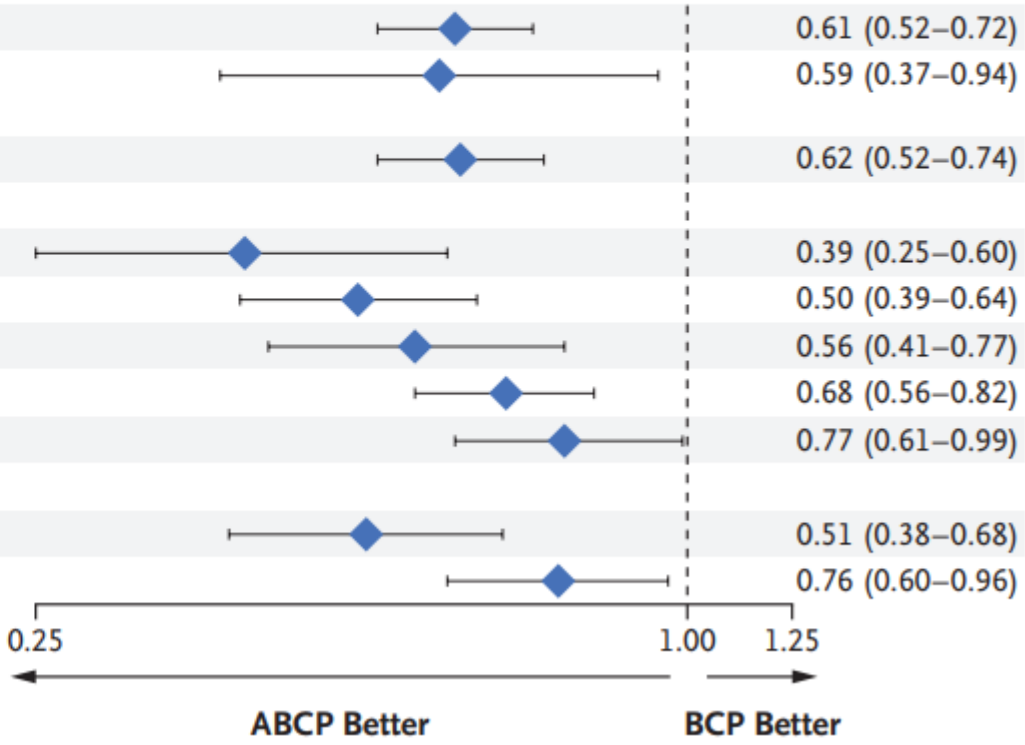

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Table 3. Incidence of Treatment-Related Adverse Events.*

Event	ABCP Group (N=393)			BCP Group (N=394)		
	Grade 1–2	Grade 3–4	Grade 5	Grade 1–2	Grade 3–4	Grade 5
	number of patients (percent)					
Treatment-related adverse events	141 (35.9)	219 (55.7)	11 (2.8)	179 (45.4)	188 (47.7)	9 (2.3)
Treatment-related adverse events with an incidence of ≥10%†						
Alopecia	183 (46.6)	0	0	173 (43.9)	0	0
Peripheral neuropathy	141 (35.9)	11 (2.8)	0	113 (28.7)	9 (2.3)	0
Nausea	119 (30.3)	15 (3.8)	0	101 (25.6)	8 (2.0)	0
Fatigue	88 (22.4)	13 (3.3)	0	79 (20.1)	10 (2.5)	0
Anemia	70 (17.8)	24 (6.1)	0	71 (18.0)	23 (5.8)	0
Decreased appetite	77 (19.6)	10 (2.5)	0	56 (14.2)	3 (0.8)	0
Diarrhea	70 (17.8)	11 (2.8)	0	58 (14.7)	2 (0.5)	0
Neutropenia	18 (4.6)	54 (13.7)	0	24 (6.1)	44 (11.2)	0
Hypertension	50 (12.7)	25 (6.4)	0	42 (10.7)	25 (6.3)	0
Arthralgia	63 (16.0)	3 (0.8)	0	55 (14.0)	4 (1.0)	0
Constipation	65 (16.5)	0	0	45 (11.4)	0	0
Asthenia	52 (13.2)	5 (1.3)	0	53 (13.5)	11 (2.8)	0
Epistaxis	50 (12.7)	4 (1.0)	0	68 (17.3)	0	0
Vomiting	50 (12.7)	6 (1.5)	0	51 (12.9)	5 (1.3)	0
Decreased platelet count	34 (8.7)	20 (5.1)	0	35 (8.9)	9 (2.3)	0
Myalgia	51 (13.0)	2 (0.5)	0	46 (11.7)	1 (0.3)	0
Thrombocytopenia	36 (9.2)	16 (4.1)	0	28 (7.1)	17 (4.3)	0
Proteinuria	41 (10.4)	10 (2.5)	0	37 (9.4)	11 (2.8)	0
Decreased neutrophil count	14 (3.6)	34 (8.7)	0	10 (2.5)	25 (6.3)	0
Rash	47 (12.0)	5 (1.3)	0	20 (5.1)	0	0
Stomatitis	43 (10.9)	4 (1.0)	0	20 (5.1)	1 (0.3)	0
Paresthesia	42 (10.7)	0	0	36 (9.1)	1 (0.3)	0
Febrile neutropenia	2 (0.5)	33 (8.4)	3 (0.8)	0	23 (5.8)	0

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	number of patients (percent)					
Treatment-related adverse events	141 (35.9)	219 (55.7)	11 (2.8)	179 (45.4)	188 (47.7)	9 (2.3)
Treatment-related adverse events with an incidence of ≥10%†						
Alopecia	183 (46.6)	0	0	173 (43.9)	0	0
Peripheral neuropathy	141 (35.9)	11 (2.8)	0	113 (28.7)	9 (2.3)	0
Nausea	119 (30.3)	15 (3.8)	0	101 (25.6)	8 (2.0)	0
Fatigue	88 (22.4)	13 (3.3)	0	79 (20.1)	10 (2.5)	0
Anemia	70 (17.8)	24 (6.1)	0	71 (18.0)	23 (5.8)	0
Decreased appetite	77 (19.6)	10 (2.5)	0	56 (14.2)	3 (0.8)	0
Diarrhea	70 (17.8)	11 (2.8)	0	58 (14.7)	2 (0.5)	0
Neutropenia	18 (4.6)	54 (13.7)	0	24 (6.1)	44 (11.2)	0
Hypertension	50 (12.7)	25 (6.4)	0	42 (10.7)	25 (6.3)	0
Arthralgia	63 (16.0)	3 (0.8)	0	55 (14.0)	4 (1.0)	0
Constipation	65 (16.5)	0	0	45 (11.4)	0	0
Asthenia	52 (13.2)	5 (1.3)	0	53 (13.5)	11 (2.8)	0
Epistaxis	50 (12.7)	4 (1.0)	0	68 (17.3)	0	0
Vomiting	50 (12.7)	6 (1.5)	0	51 (12.9)	5 (1.3)	0
Decreased platelet count	34 (8.7)	20 (5.1)	0	35 (8.9)	9 (2.3)	0
Myalgia	51 (13.0)	2 (0.5)	0	46 (11.7)	1 (0.3)	0
Thrombocytopenia	36 (9.2)	16 (4.1)	0	28 (7.1)	17 (4.3)	0
Proteinuria	41 (10.4)	10 (2.5)	0	37 (9.4)	11 (2.8)	0
Decreased neutrophil count	14 (3.6)	34 (8.7)	0	10 (2.5)	25 (6.3)	0
Rash	47 (12.0)	5 (1.3)	0	20 (5.1)	0	0
Stomatitis	43 (10.9)	4 (1.0)	0	20 (5.1)	1 (0.3)	0
Paresthesia	42 (10.7)	0	0	36 (9.1)	1 (0.3)	0
Febrile neutropenia	2 (0.5)	33 (8.4)	3 (0.8)	0	23 (5.8)	0

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Table S7: Immune-Related Adverse Events.*

No. of Patients (%)	ABCP (N=393)	BCP (N=394)
Rash		
All grades	113 (28.8)	52 (13.2)
Grade 3–4	9 (2.3)	2 (0.5)
Hepatitis (laboratory abnormalities)		
All grades	47 (12.0)	29 (7.4)
Grade 3–4	16 (4.1)	3 (0.8)
Hypothyroidism		
All grades	50 (12.7)	15 (3.8)
Grade 3–4	1 (0.3)	0
Hyperthyroidism		
All grades	16 (4.1)	5 (1.3)
Grade 3–4	1 (0.3)	0
Pneumonitis		
All grades	11 (2.8)	5 (1.3)
Grade 3–4	6 (1.5)	2 (0.5)
Colitis		
All grades	9 (2.3)	2 (0.5)
Grade 3–4	5 (1.3)	2 (0.5)
Hepatitis (diagnosis)		
All grades	8 (2.0)	0
Grade 3–4	4 (1.0)	0
Severe cutaneous reaction		
All grades	4 (1.0)	1 (0.3)
Adrenal insufficiency		
All grades	2 (0.5)	3 (0.8)
Grade 3–4	1 (0.3)	1 (0.3)
Pancreatitis		
All grades	5 (1.3)	0
Grade 3–4	2 (0.5)	0
Hypophysitis		
All grades	3 (0.8)	0
Grade 3–4	1 (0.3)	0
Nephritis		
All grades	3 (0.8)	0
Grade 3–4	1 (0.3)	0
Ocular inflammatory toxicity		
All grades	3 (0.8)	0
Grade 3–4	1 (0.3)	0
Myositis		
All grades	2 (0.5)	1 (0.3)
Grade 3–4	1 (0.3)	0
Autoimmune hemolytic anemia		
All grades	1 (0.3)	1 (0.3)
Vasculitis		
All grades	1 (0.3)	1 (0.3)

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Immunotherapy options in first line metastatic NSCLC

- Nonsquamous
  - Pembrolizumab as monotherapy (PD-L1 >50%)
  - Pembrolizumab, carboplatin, pemetrexed (PD-L1 independent)
  - Atezolizumab, bevacizumab, carboplatin, paclitaxel (PD-L1 independent)

- Squamous
  - Pembrolizumab as monotherapy (PD-L1 >50%)
  - Pembrolizumab, carboplatin, paclitaxel or nab-paclitaxel (PD-L1 independent)

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Clinical trials presented at ESMO-Immuno-Oncology Congress 2018

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Randomized Phase 3 Study of Nivolumab Monotherapy Versus Chemotherapy in Relapsed Small Cell Lung Cancer: Results From CheckMate 331

Martin Reck,[1] David Vicente,[2] Tudor Ciuleanu,[3] Scott Gettinger,[4] Solange Peters,[5] Leora Horn,[6] Clarisse Audigier-Valette,[7] Nuria Pardo,[8] Oscar Juan-Vidal,[9] Ying Cheng,[10] Helong Zhang,[11] Meiqi Shi,[12] Juergen Wolf,[13] Scott Antonia,[14] Kazuhiko Nakagawa,[15] Giovanni Selvaggi,[16] Christine Baudelet,[16] Han Chang,[16] David R. Spigel[17]

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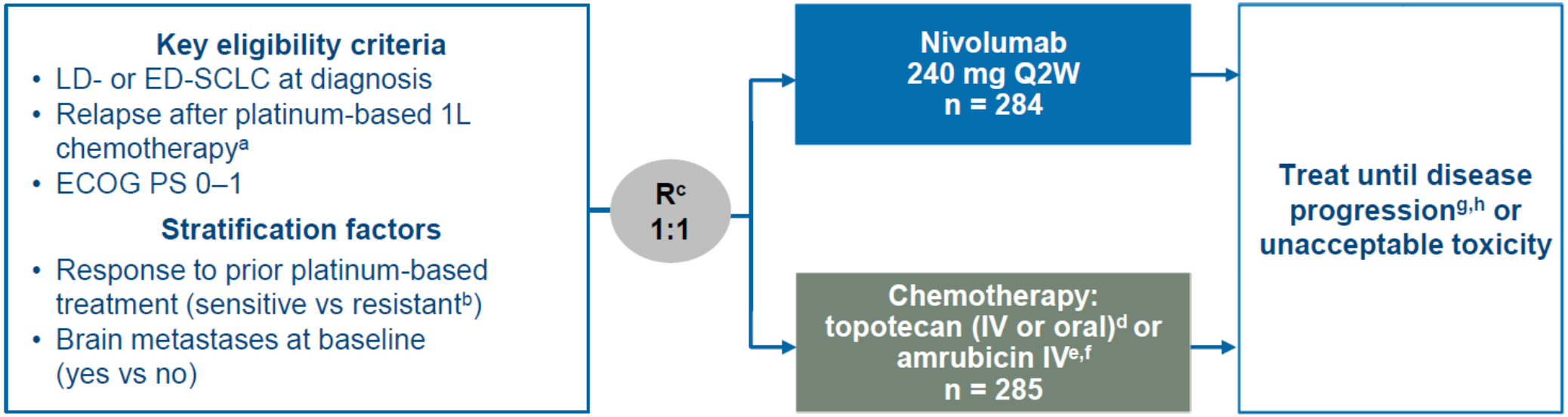
Reck, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

CheckMate 331 Study Design



Primary endpoint: OS

Secondary endpoints: PFS[g] and ORR[g] (investigator assessed)

- Database lock: 28 September 2018; minimum follow-up for OS: 15.8 months
- Median follow-up[i]: 7.0 months (nivolumab), 7.6 months (chemotherapy)

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Reck, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

Baseline Characteristics

	Nivolumab (n = 284)	Chemotherapy[a] (n = 285)
Age, median (range), y	62 (37–85)	61 (34–82)
Female, n (%)	110 (39)	108 (38)
Race, n (%)[b]		
White	211 (74)	211 (74)
Asian	70 (25)	71 (25)
Disease classification, n (%)[c]		
Limited disease	74 (26)	94 (33)
Extensive disease	210 (74)	191 (67)
ECOG PS, n (%)[d]		
0	75 (26)	81 (28)
1	209 (74)	203 (71)
Smoking status, n (%)[e]		
Current or former	256 (90)	260 (91)
Never smoker	26 (9)	24 (8)
Response to 1L therapy, n (%)		
Platinum sensitive[f]	163 (57)	160 (56)
Platinum resistant[g]	121 (43)	125 (44)
CNS metastases, n (%)		
No	234 (82)	239 (84)
Yes	50 (18)	46 (16)
Liver metastases, n (%)		
No or NR[h]	187 (66)	177 (62)
Yes	97 (34)	108 (38)

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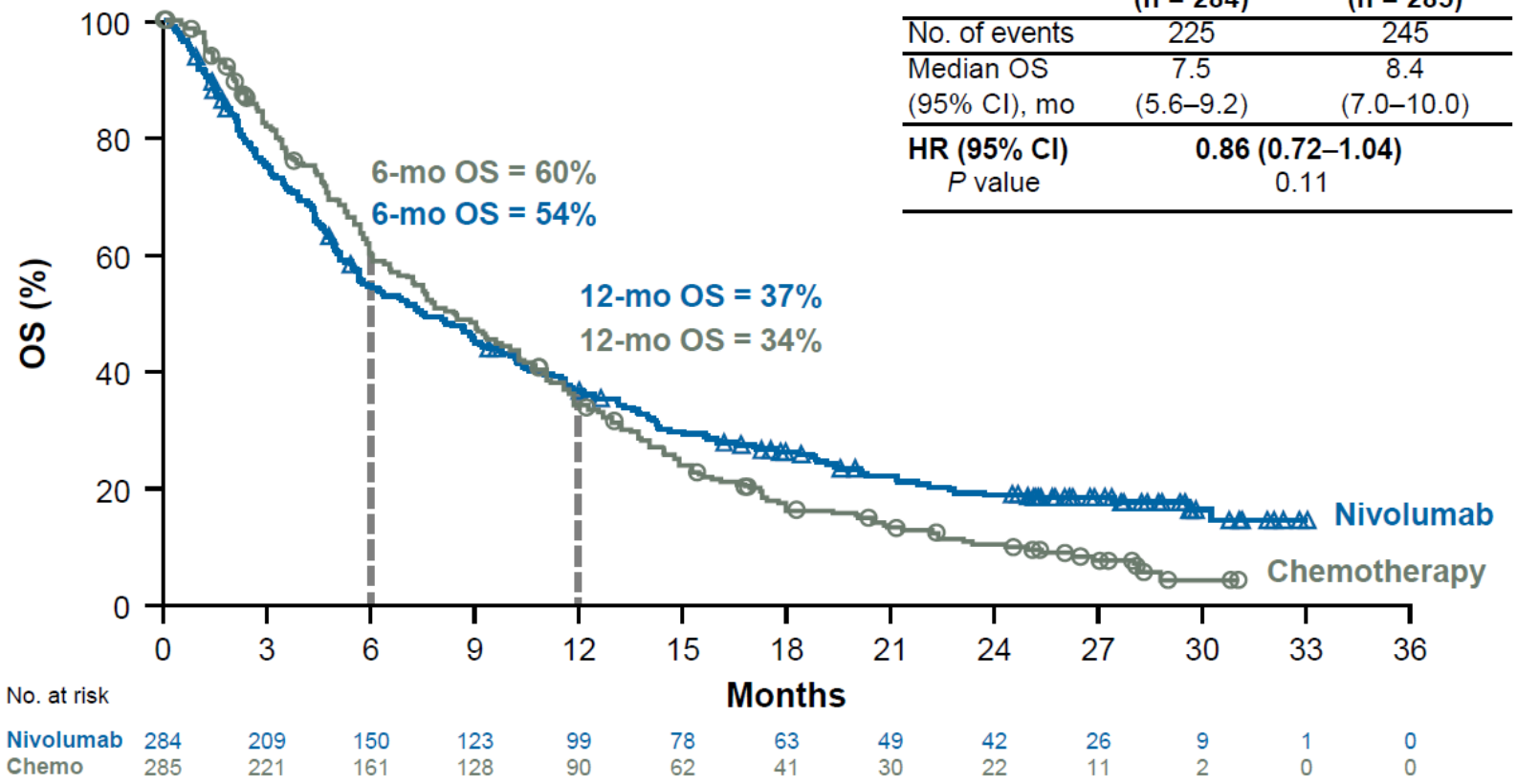
Reck, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

Primary Endpoint: OS With Nivolumab vs Chemotherapy



	Nivolumab (n = 284)	Chemotherapy (n = 285)
No. of events	225	245
Median OS (95% CI), mo	7.5 (5.6–9.2)	8.4 (7.0–10.0)
HR (95% CI)	**0.86 (0.72–1.04)**	
P value	0.11	

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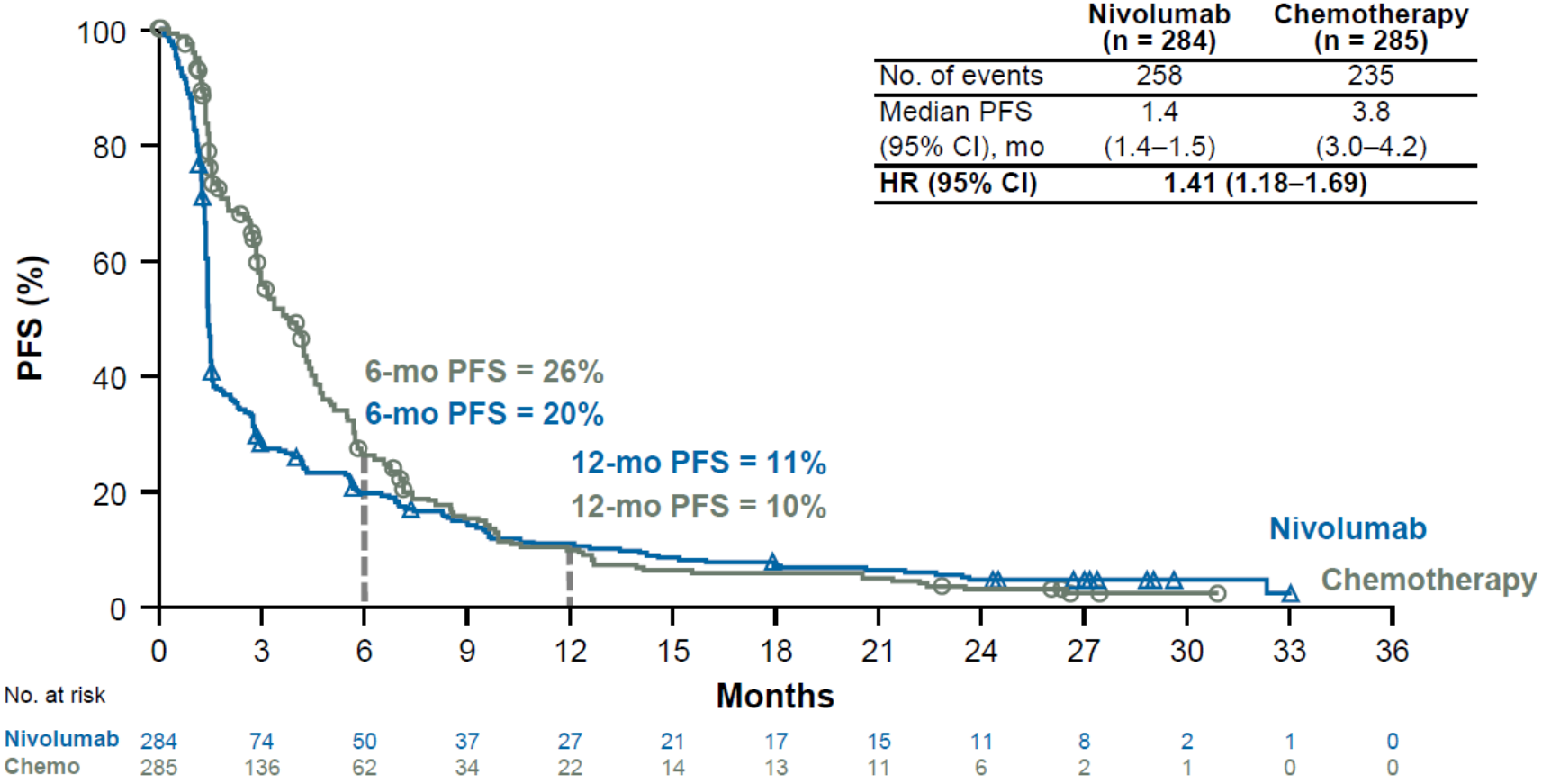
Reck, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

PFS With Nivolumab vs Chemotherapy[a]

	Nivolumab (n = 284)	Chemotherapy (n = 285)
No. of events	258	235
Median PFS (95% CI), mo	1.4 (1.4–1.5)	3.8 (3.0–4.2)
HR (95% CI)	**1.41 (1.18–1.69)**	



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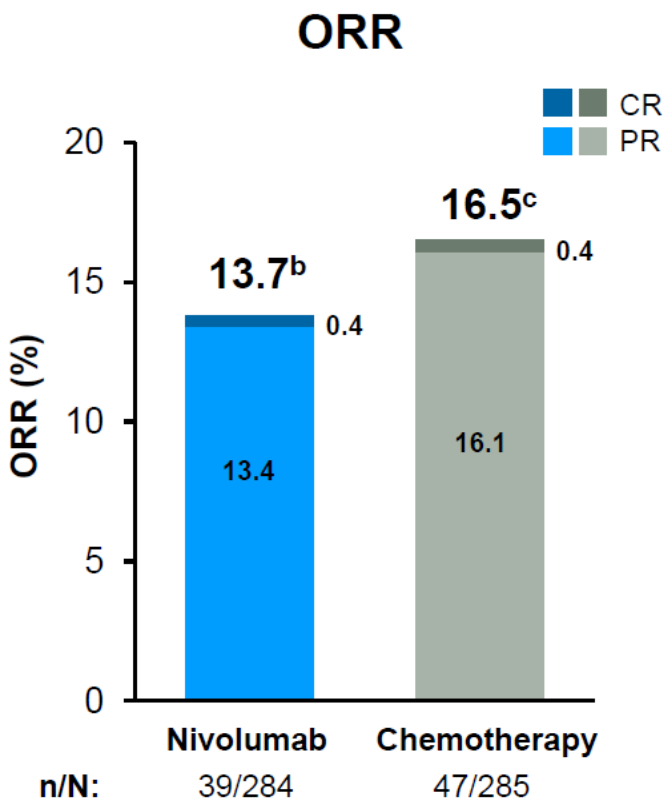
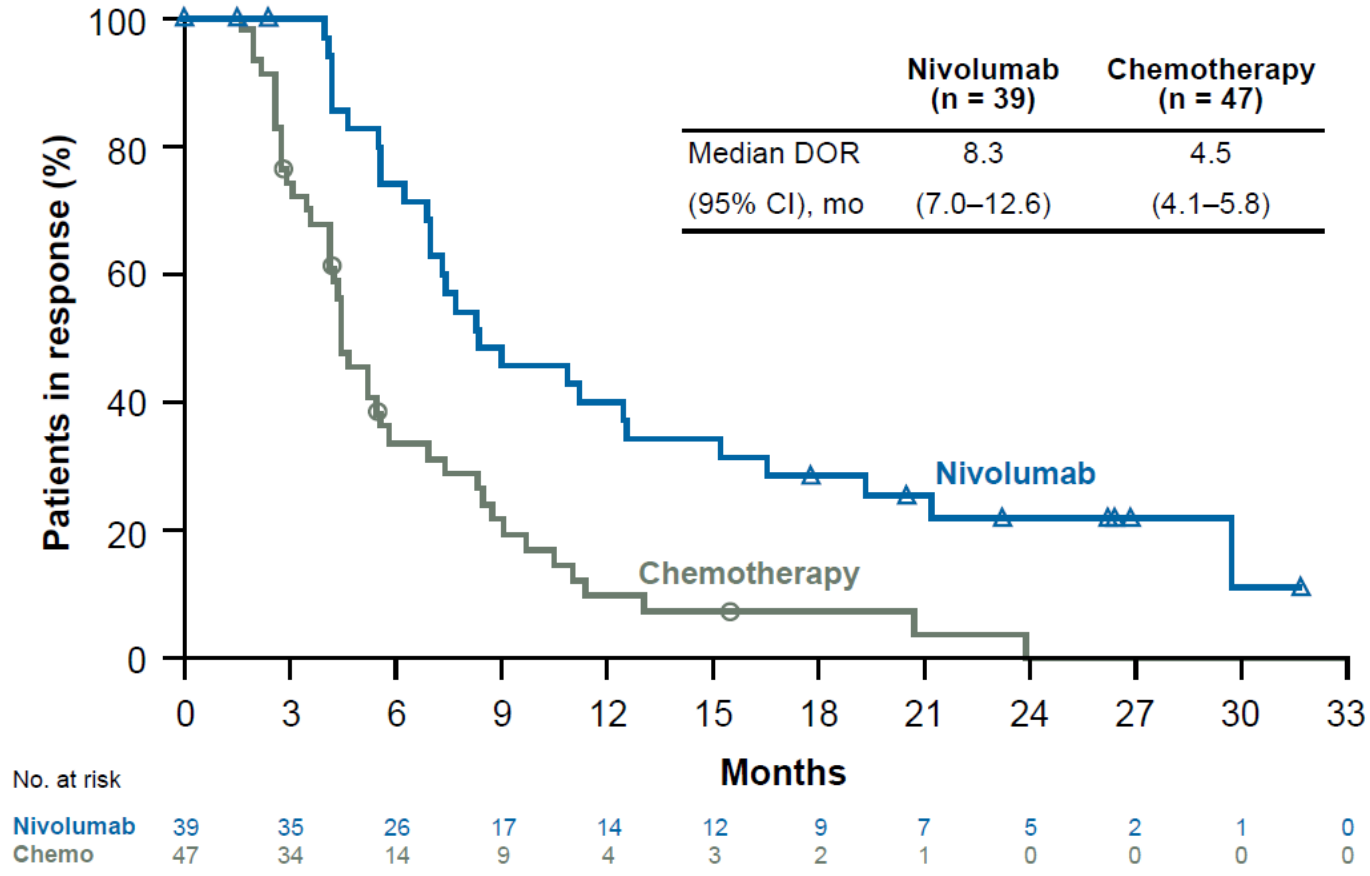
ORR and DOR With Nivolumab vs Chemotherapy[a]





	Nivolumab (n = 39)	Chemotherapy (n = 47)
Median DOR	8.3	4.5
(95% CI), mo	(7.0–12.6)	(4.1–5.8)

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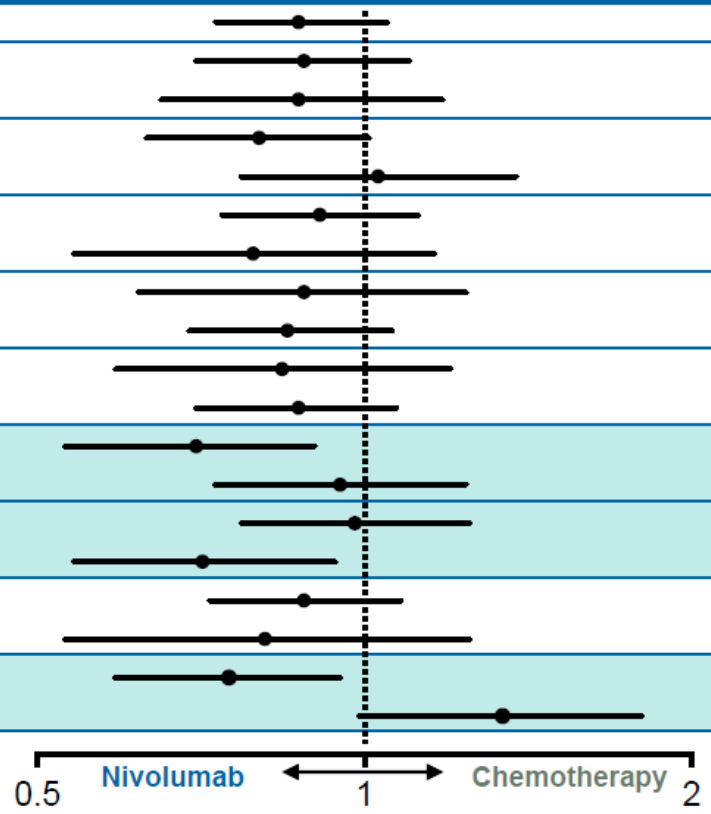
OS Subgroup Analysis

Subgroup	Median OS, mo Nivolumab	Median OS, mo Chemotherapy	Unstratified HR
Overall (n = 569)	7.5	8.4	0.87
<65 years (n = 361)	8.0	7.8	0.88
≥65 years (n = 208)	7.3	8.9	0.87
Male (n = 351)	7.3	7.6	0.80
Female (n = 218)	8.6	9.0	1.03
White (n = 422)	6.0	8.4	0.91
Asian (n = 141)	11.5	10.0	0.79
Limited disease[a] (n = 168)	10.2	9.6	0.88
Extensive disease[a] (n = 401)	6.3	7.5	0.85
ECOG PS 0[b] (n = 156)	10.2	10.9	0.84
ECOG PS ≥1[b] (n = 413)	5.8	7.5	0.87
LDH ≤ ULN[b] (n = 293)	13.6	11.6	0.70
LDH > ULN[b] (n = 246)	4.4	4.7	0.95
PT sensitive (n = 323)	7.6	11.1	0.98
PT resistant (n = 246)	7.0	5.7	0.71
No CNS metastases[b] (n = 473)	7.3	8.9	0.88
CNS metastases[b] (n = 96)	8.1	6.0	0.81
No liver metastases or NR[b,c] (n = 364)	11.2	10.5	0.75
Liver metastases[b] (n = 205)	3.9	5.9	1.34



[a]At diagnosis. [b]At baseline.
[c]1 patient in the chemotherapy arm had no assessment of liver metastases at baseline

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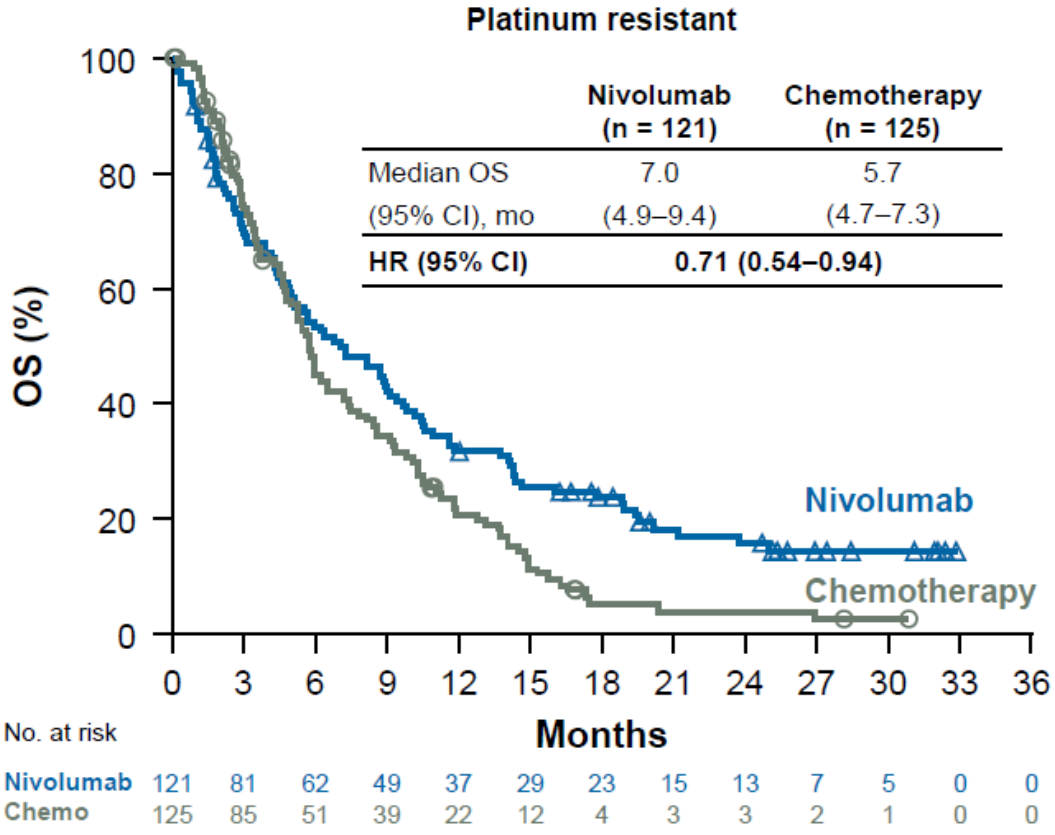
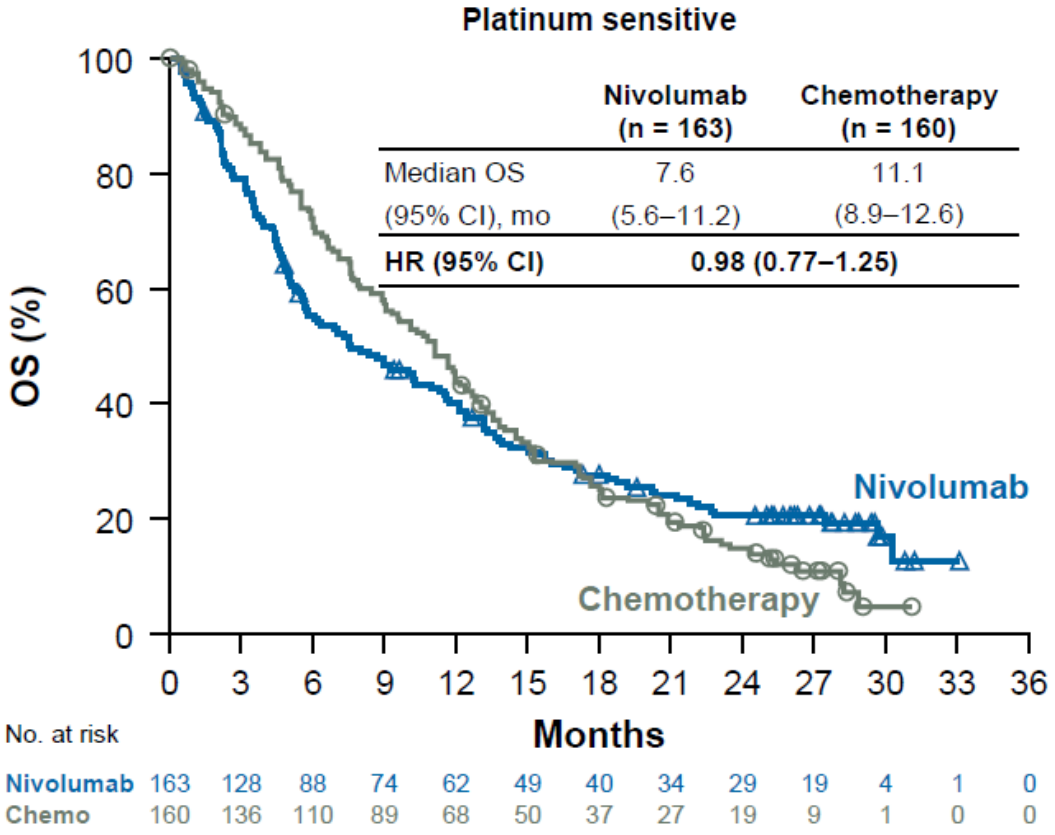
OS by Response to Prior Platinum Therapy[a]





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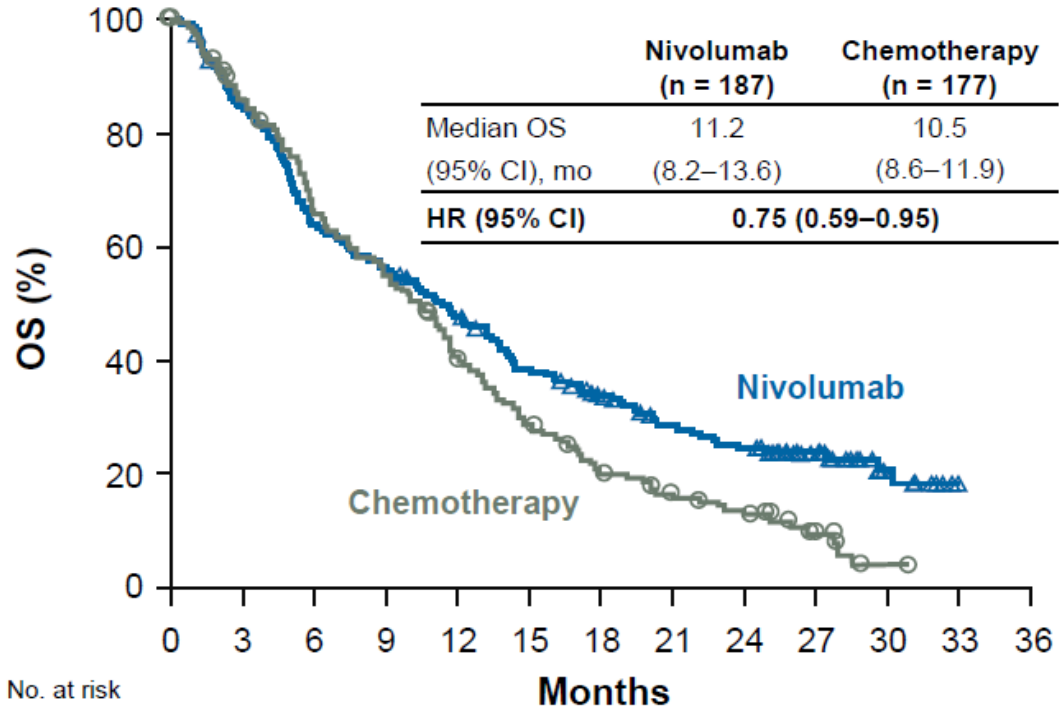
OS in Patients Without and With Baseline Liver Metastases

Without liver metastases

	Nivolumab (n = 187)	Chemotherapy (n = 177)
Median OS (95% CI), mo	11.2 (8.2–13.6)	10.5 (8.6–11.9)
HR (95% CI)	0.75 (0.59–0.95)	

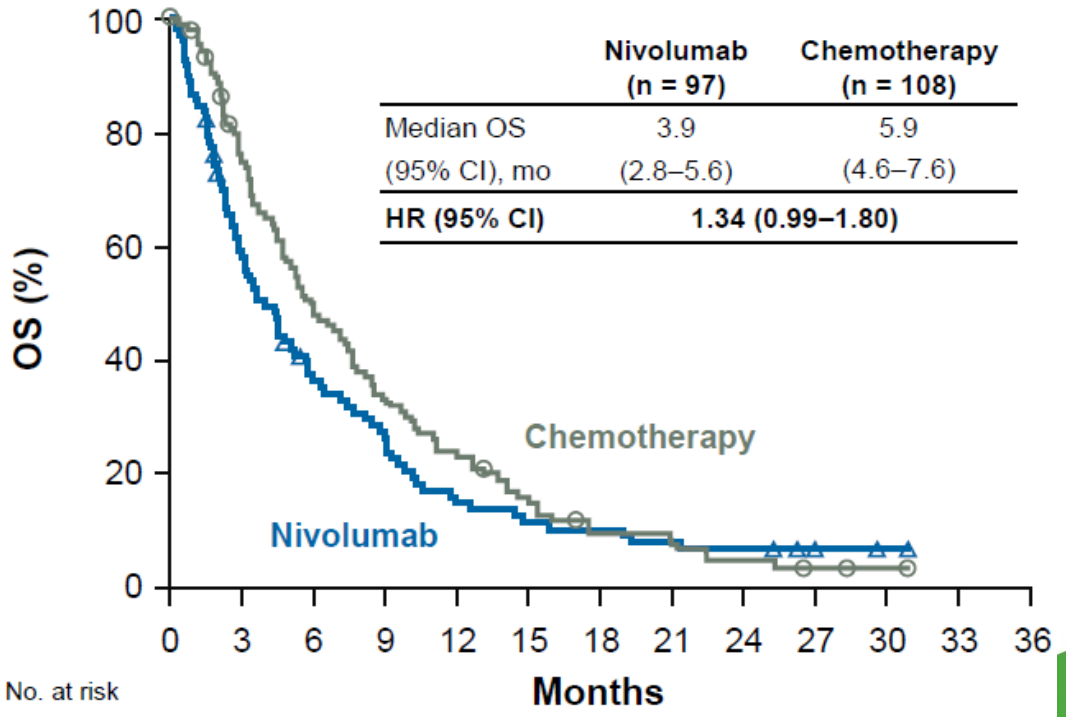


No. at risk

Nivolumab	187	155	118	102	86	68	54	42	36	23	8	1	0
Chemo	177	146	113	95	67	48	33	24	18	9	1	0	0

With liver metastases

	Nivolumab (n = 97)	Chemotherapy (n = 108)
Median OS (95% CI), mo	3.9 (2.8–5.6)	5.9 (4.6–7.6)
HR (95% CI)	1.34 (0.99–1.80)	



No. at risk

Nivolumab	97	54	32	21	13	10	9	7	6	3	1	0	0
Chemo	108	75	48	33	23	14	8	6	4	2	1	0	0

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Safety Summary of Treatment-Related AEs

TRAE,[a] n (%)	Nivolumab (n = 282)		Chemotherapy (n = 265)	
	Any grade	Grade 3–4	Any grade	Grade 3–4
Any TRAE	156 (55)	39 (14)	239 (90)	194 (73)
Serious TRAEs	37 (13)	22 (8)	87 (33)	81 (31)
TRAE leading to discontinuation	17 (6)	12 (4)	38 (14)	25 (9)
Most frequent TRAEs (≥15%[b])				
Asthenia	25 (9)	2 (1)	42 (16)	17 (6)
Fatigue	25 (9)	0	54 (20)	13 (5)
Decreased appetite	21 (7)	1 (0.4)	40 (15)	5 (2)
Anemia	13 (5)	0	147 (56)	68 (26)
Nausea	14 (5)	0	47 (18)	2 (1)
Platelet count decreased	5 (2)	1 (0.4)	63 (24)	34 (13)
Thrombocytopenia	5 (2)	0	80 (30)	56 (21)
White blood cell count decreased	4 (1)	1 (0.4)	45 (17)	30 (11)
Leukopenia	4 (1)	0	43 (16)	31 (12)
Neutropenia	4 (1)	1 (0.4)	91 (34)	73 (28)
Neutrophil count decreased	0	0	58 (22)	45 (17)
Treatment-related deaths[c]	2 (1)		3 (1)	

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Summary of Treatment-Related Select AEs

Select TRAE,[a] n (%)	Nivolumab (n = 282)		Chemotherapy (n = 265)	
	Any grade	Grade 3–4	Any grade	Grade 3–4
Endocrine	33 (12)	2 (1)	0	0
Skin	32 (11)	1 (0.4)	3 (1)	1 (0.4)
Gastrointestinal	20 (7)	3 (1)	24 (9)	4 (2)
Hepatic	13 (5)	7 (2)	15 (6)	1 (0.4)
Pulmonary	13 (5)	4 (1)	1 (0.4)	0
Hypersensitivity/infusion reaction	12 (4)	0	16 (6)	2 (1)
Renal	6 (2)	1 (0.4)	5 (2)	0

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IMpower133: Patient-reported outcomes (PROs) in a Ph1/3 study of first-line (1L) atezolizumab + carboplatin + etoposide (CP/ET) in extensive-stage SCLC (ES-SCLC)

Raffaele Califano,[1] Andrzej Każarnowicz,[2] Nina Karaseva,[3] Amparo Sánchez,[4] Stephen V Liu,[5] Leora Horn,[6] Caroleen Quach[7], Wei Yu,[7] Fairooz Kabbinavar,[7] Sivuonthanh Lam,[7] Aaron Mansfield[8]

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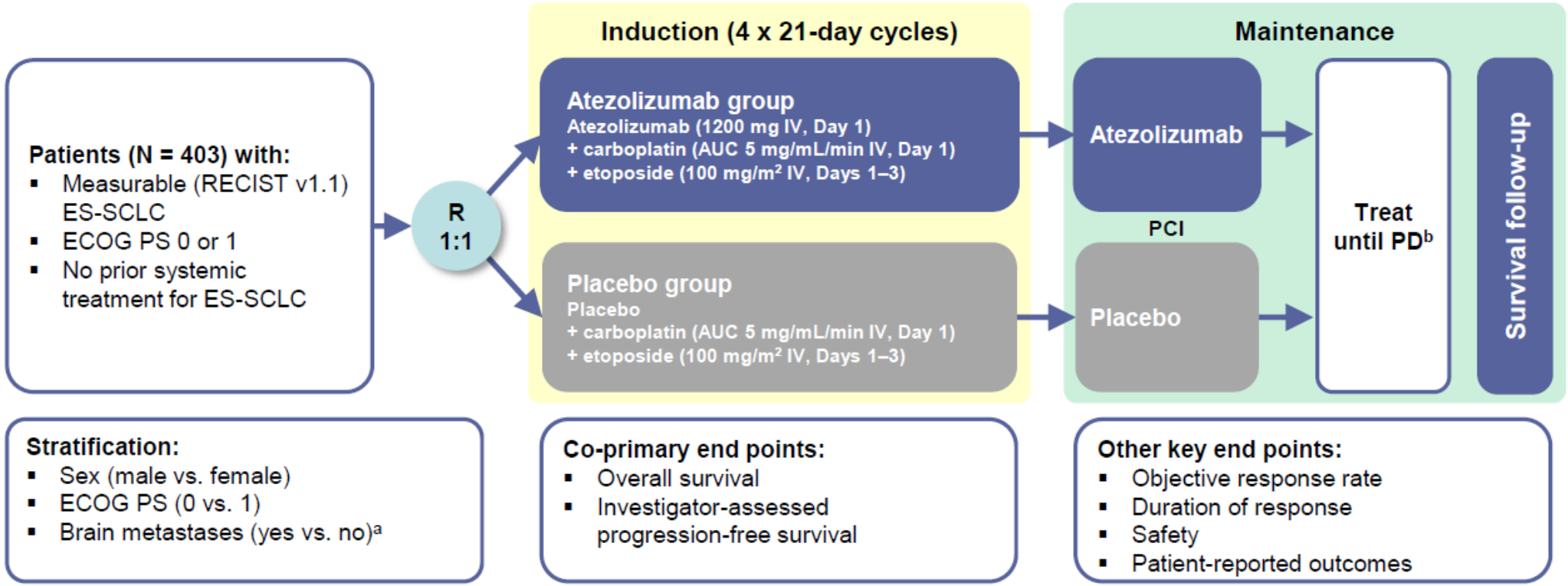
Mansfield, Annals of Oncology (2018) 29 (suppl_10): x17-x23. 10.1093/annonc/mdy486

IMpower133 (NCT02763579)

Global Phase 1/3, double-blind, randomised, placebo-controlled trial that evaluated atezolizumab + CP/ET in 1L ES-SCLC



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Baseline characteristics

Characteristic	Atezolizumab + CP/ET (n = 201)	Placebo + CP/ET (n = 202)
Median age — years (range)	64 (28–90)	64 (26–87)
Age group — no. (%)		
< 65 years	111 (55.2)	106 (52.5)
≥ 65 years	90 (44.8)	96 (47.5)
Male sex — no. (%)[a]	129 (64.2)	132 (65.3)
ECOG performance status — no. (%)[a]		
0	73 (36.3)	67 (33.2)
1	128 (63.7)	135 (66.8)
Smoking status — no. (%)		
Never smoked	9 (4.5)	3 (1.5)
Current smoker	74 (36.8)	75 (37.1)
Former smoker	118 (58.7)	124 (61.4)
Brain metastases at enrolment — no. (%)[a]	17 (8.5)	18 (8.9)
Median sum of longest diameter of target lesions at baseline (range)	113.0 (12.0–325.0)	105.5 (15.0–353.0)
Previous anti-cancer treatments — no. (%)		
Chemotherapy or non-anthracycline	8 (4.0)	12 (5.9)
Radiotherapy	25 (12.4)	28 (13.9)
Cancer-related surgery	33 (16.4)	25 (12.4)

Clinical data cut-off date: 24 April, 2018. [a] The data were determined from electronic case-report forms.
Horn L, et al. *N Engl J Med*, 2018.

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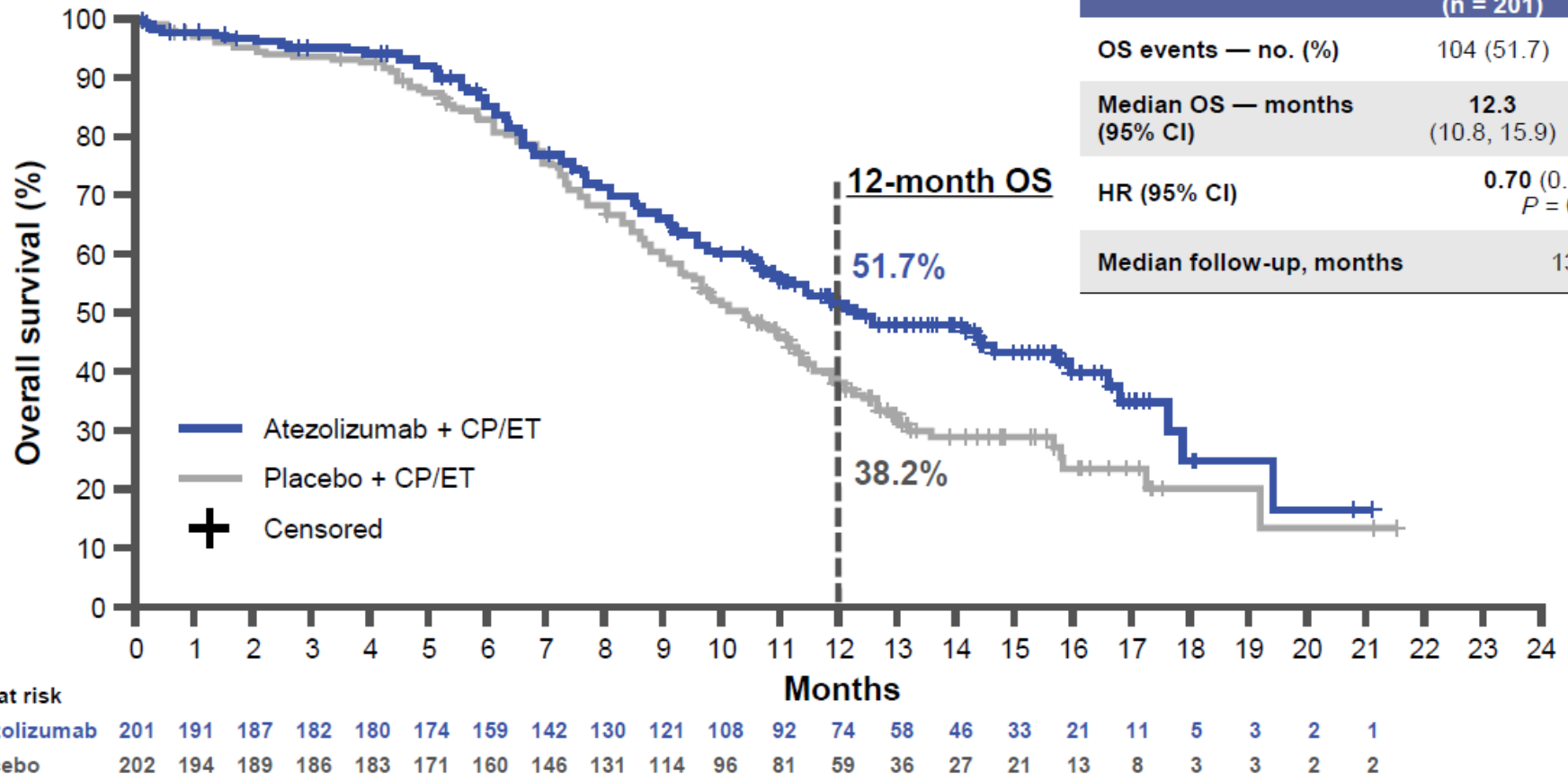
Overall survival



	Atezolizumab + CP/ET (n = 201)	Placebo + CP/ET (n = 202)
OS events — no. (%)	104 (51.7)	134 (66.3)
Median OS — months (95% CI)	**12.3** (10.8, 15.9)	**10.3** (9.3, 11.3)
HR (95% CI)	**0.70** (0.54, 0.91) *P* = 0.007	
Median follow-up, months	13.9	

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Safety and exposure summary

	Atezolizumab + CP/ET (n = 198)[a]	Placebo + CP/ET (n = 196)[a]
Patients with ≥ 1 AE — no. of patients (%)	198 (100)	189 (96.4)
Grade 3–4 AEs	133 (67.2)	125 (63.8)
Grade 5 AEs	4 (2.0)	11 (5.6)
Treatment-related AEs[b] — no. of patients (%)	188 (94.9)	181 (92.3)
Treatment-related Grade 3–4 AEs	112 (56.6)	110 (56.1)
Treatment-related Grade 5 AEs	3 (1.5)	3 (1.5)
Serious AEs — no. of patients (%)	74 (37.4)	68 (34.7)
Treatment-related serious AEs[b]	45 (22.7)	37 (18.9)
AEs leading to withdrawal from any treatment — no. of patients (%)	22 (11.1)	6 (3.1)
Median duration of atezolizumab treatment — months (range)	4.7 (0–21)	–
Median atezolizumab doses — no. (range)	7 (1–30)	–
Median duration of carboplatin — months (range)	2.3 (0–4)	2.2 (0–4)
Median duration of etoposide — months (range)	2.3 (0–4)	2.2 (0–4)

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Patient-reported outcome assessments

Lung cancer-related symptoms or concerns			Treatment-related symptoms		Function	HRQoL
▪ **Dyspnoea**	▪ **Pain in chest**	▪ Pain	▪ Alopecia	▪ **Nausea and vomiting**	▪ **Physical**	▪ **Global health status**
▪ **Cough**	▪ Pain in other parts	▪ Financial impact	▪ **Sore mouth**	▪ Insomnia	▪ Role	
▪ Haemoptysis	▪ **Fatigue**		▪ **Dysphagia**	▪ **Constipation**	▪ Emotional	
▪ **Pain in arm or shoulder**	▪ **Appetite loss**		▪ **Peripheral neuropathy**	▪ **Diarrhoea**	▪ Cognitive	
					▪ Social	

- Each EORTC QLQ-30[1] or QLC-LC13[2] scale score range is 0–100
- Higher scores indicate a higher response level: Either worse symptoms, better function, or better HRQoL

Induction phase (4 x 21-day cycles)	Maintenance phase	Survival follow-up
Scheduled study treatment visits every 21 days until treatment discontinuation		At 3 months and 6 months after disease progression per RECIST v1.1 or after treatment discontinuation

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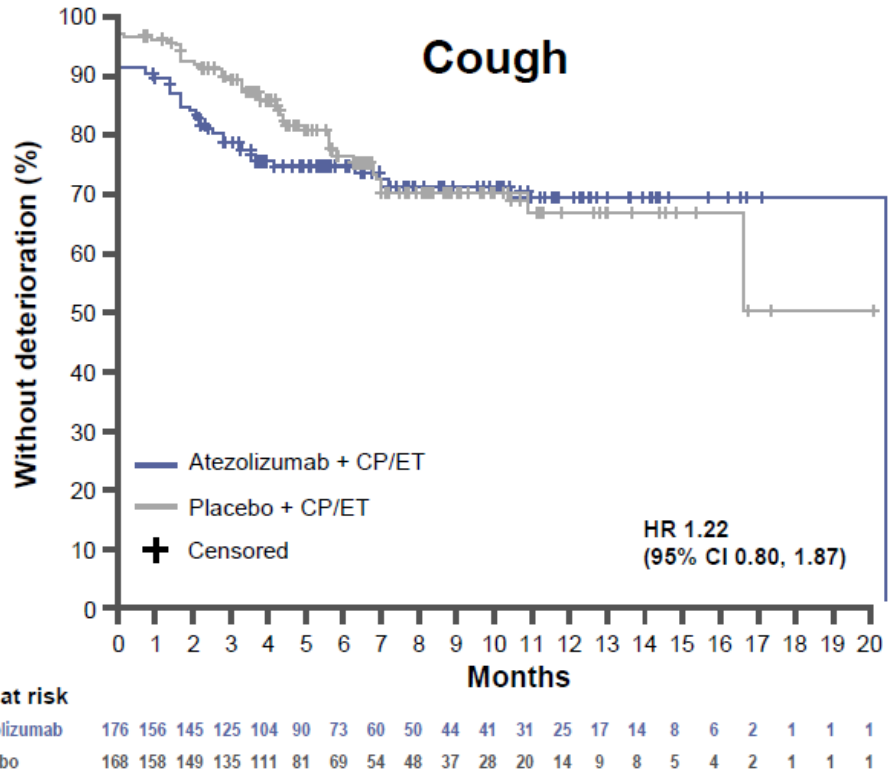
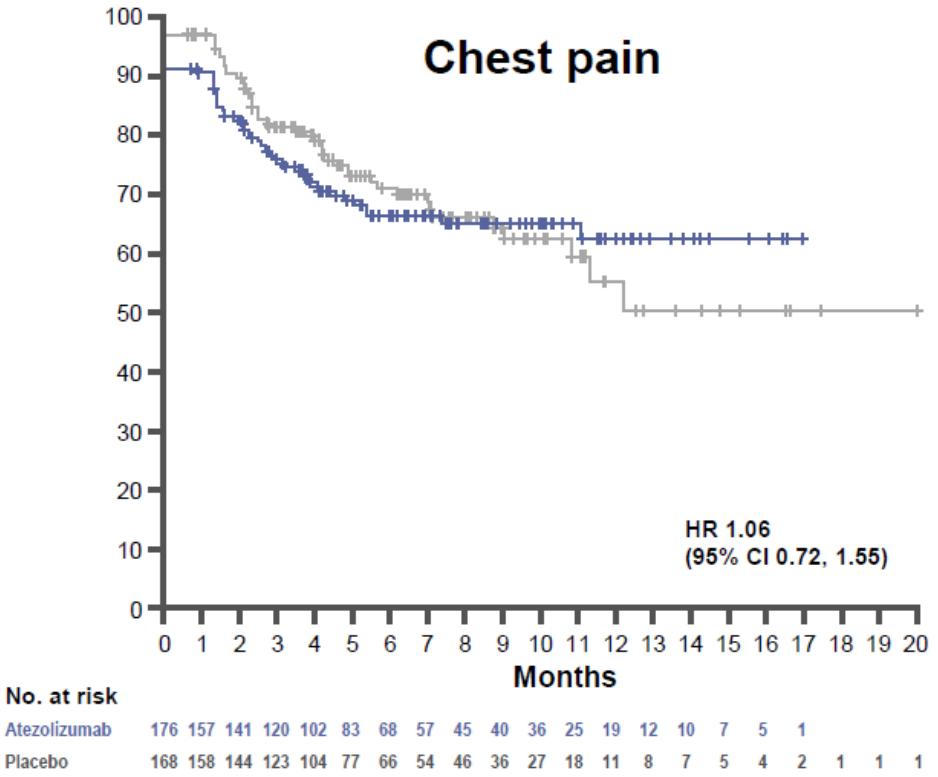
Time to deterioration of disease-related symptoms





Times to deterioration in cough and chest pain were similar between arms

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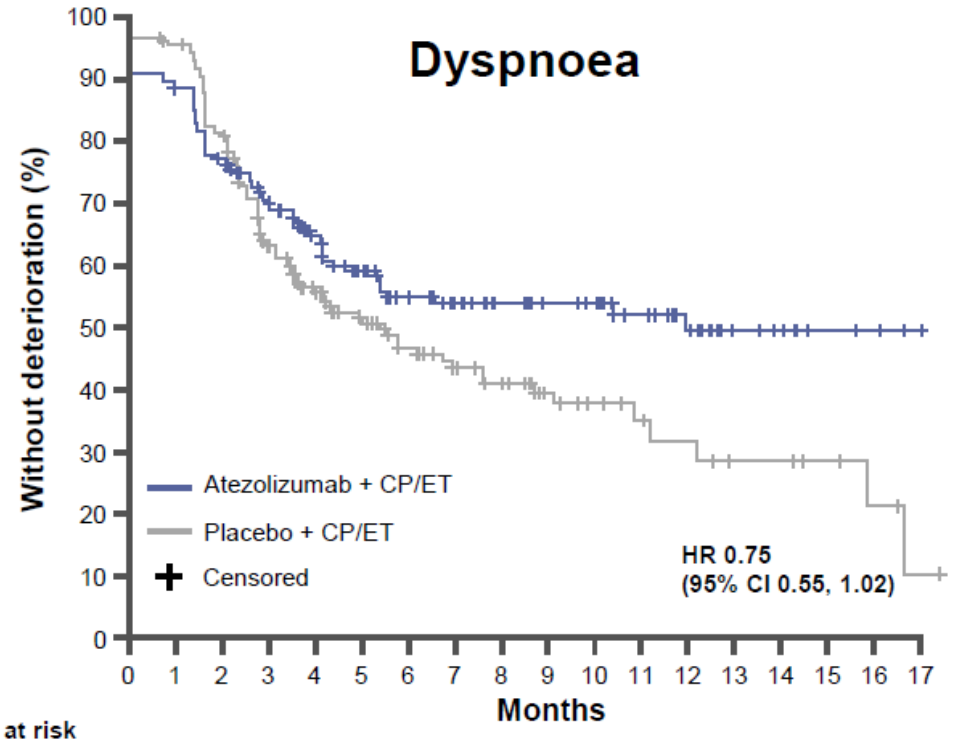
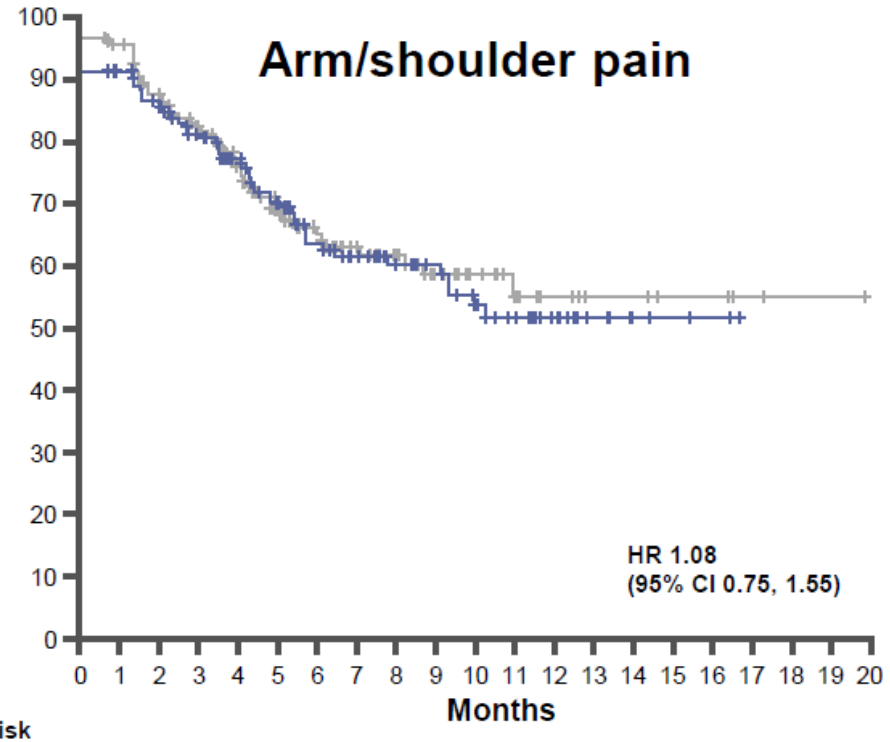
Time to deterioration of disease-related symptoms



No. at risk

Atezolizumab	176	156	135	116	93	75	60	52	44	39	37	26	20	11	9	5	4	1
Placebo	168	158	134	97	77	58	46	38	33	23	18	13	10	7	7	5	3	1

Trend towards delayed worsening of dyspnoea in the atezolizumab + CP/ET arm



No. at risk

Atezolizumab	176	158	147	127	105	83	63	53	44	38	33	21	15	8	6	3	2					
Placebo	168	157	141	123	100	73	62	49	44	34	25	17	10	6	6	4	4	2	1	1	1	

Time to deterioration of arm/shoulder pain was similar between arms

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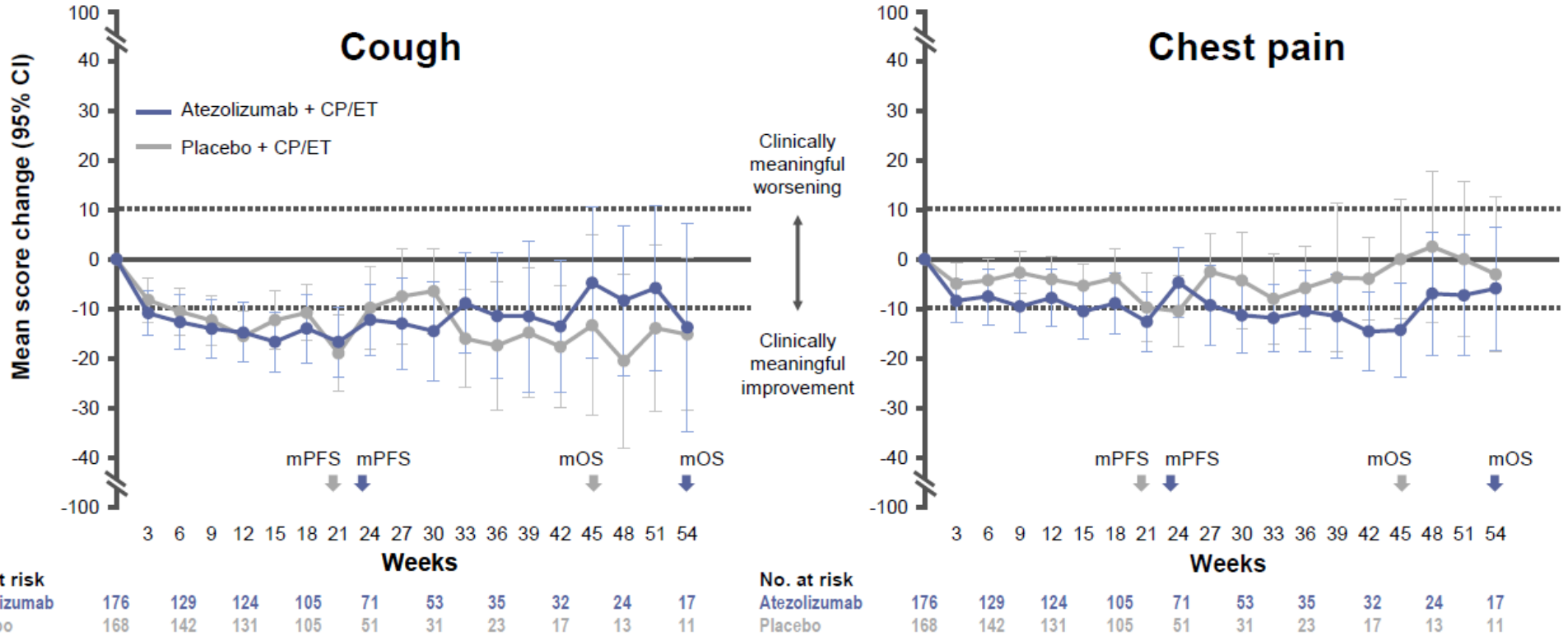
Change from baseline in disease-related symptoms



Patients in both arms reported notable improvement of symptoms, with earlier and more pronounced improvements in chest pain reported by patients receiving atezolizumab + CP/ET

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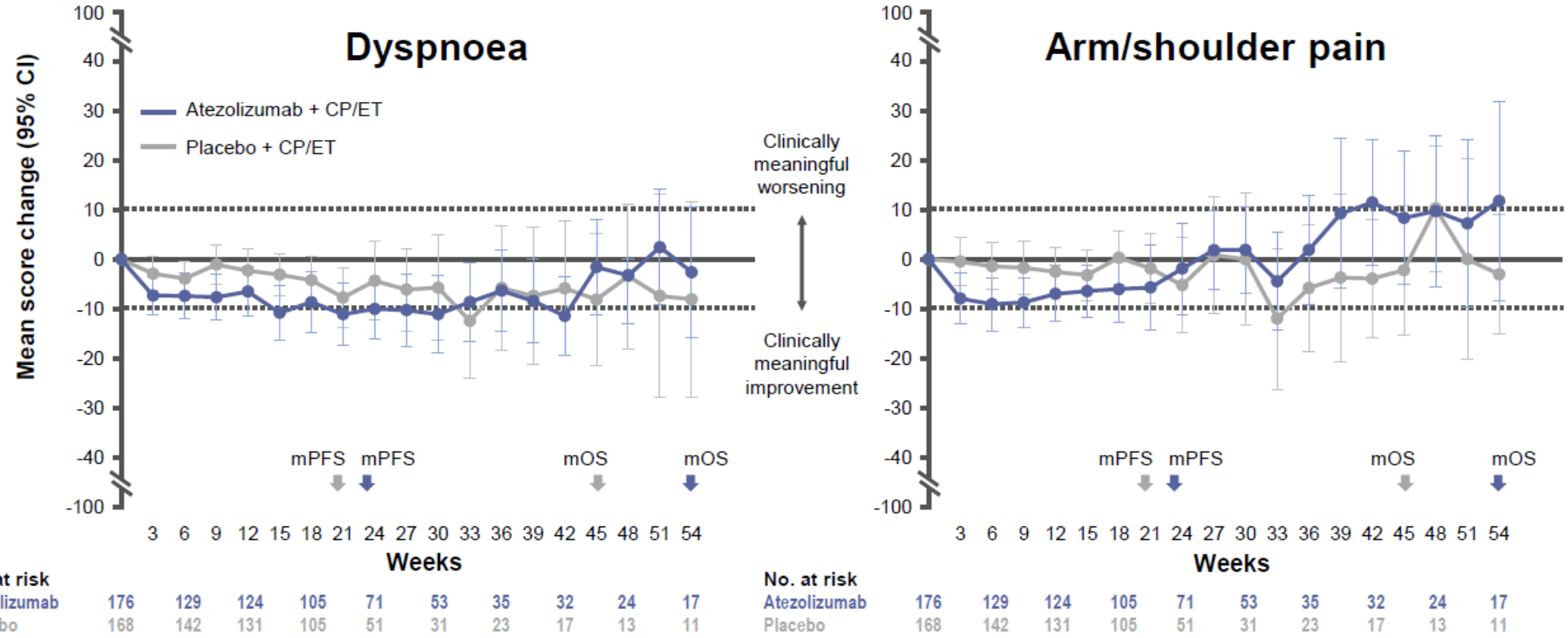
Change from baseline in disease-related symptoms



Trend towards earlier and greater improvement in symptoms during the first 6 months for patients in the atezolizumab + CP/ET arm

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Checkmate 331 and Impower 133 summary

- Checkmate 331
  - Nivolumab did not meet primary endpoint of improved OS over chemotherapy in the second line setting.
  - Responses to nivolumab were more durable of chemotherapy
  - Nivolumab appears more effective platinum resistant tumors and patient without liver metastasis
- IMpower 133
  - Atezolizumab combination chemotherapy increased 12 month OS from 51.7% over standard chemotherapy alone at 38.2%
  - PRO allowed a greater understanding of therapy's effect on patients disease course.

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DURVALUMAB WITH OR WITHOUT TREMELIMUMAB VS PLATINUM-BASED CHEMOTHERAPY AS FIRST-LINE TREATMENT FOR METASTATIC NON-SMALL CELL LUNG CANCER: MYSTIC

Naiyer Rizvi,[1] Byoung Chul Cho,[2] Niels Reinmuth,[3] Ki Hyeong Lee,[4] Myung-Ju Ahn,[5] Alexander Luft,[6] Michael van den Heuvel,[7] Manuel Cobo,[8] Alexey Smolin,[9] David Vicente,[10] Vladimir Moiseyenko,[11] Scott Antonia,[12] Sylvestre Le Moulec,[13] Gilles Robinet,[14] Ronald Natale,[15] Kazuhiko Nakagawa,[16] Luping Zhao,[17] Koustubh Ranade,[18] Paul Stockman,[19] Vikram Chand,[17] Solange Peters[20]

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Rizvi, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

MYSTIC STUDY DESIGN

Phase 3, global, randomised, open-label, multicentre study

- Stage IV NSCLC
- All-comers population (i.e. irrespective of PD-L1 status)
- No sensitising *EGFR* mutation or *ALK* rearrangement
- ECOG PS 0/1
- Immunotherapy- and CT-naïve

N=1118 randomised

1:1:1

R

Stratified by PD-L1 TC (<25% vs ≥25%*) and histology

Durvalumab (n=374)
20 mg/kg q4w until disease progression

Durvalumab + tremelimumab (n=372)
D 20 mg/kg q4w until disease progression +
T 1 mg/kg q4w for up to 4 doses

Platinum-based chemotherapy (n=372)
- Paclitaxel + carboplatin OR
- Gemcitabine + cisplatin/carboplatin (squamous) OR
- Pemetrexed + cisplatin/carboplatin (non-squamous)†

for up to 6 cycles

Primary endpoints (PD-L1 TC ≥25%*):
- PFS‡ (D+T vs CT)
- OS (D vs CT)
- OS (D+T vs CT)

Key secondary endpoints:
- PFS‡ (D vs CT; PD-L1 TC ≥25%*)
- OS (D+T vs CT; PD-L1 TC ≥1%*)
- ORR‡
- DoR
- Safety and tolerability

Key exploratory endpoints:
- OS by additional PD-L1 TC cutoffs
- OS by blood TMB

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Rizvi, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

BASELINE CHARACTERISTICS

	Durvalumab	Durvalumab + tremelimumab	Chemotherapy
PD-L1 TC ≥25% population*	n=163	n=163	n=162
Median age (range), years	64.0 (32–84)	65.0 (34–87)	64.5 (35–85)
Male, %	69.3	72.4	65.4
White / Asian / Other, %	62.0 / 36.2 / 1.8	68.1 / 30.7 / 1.2	69.8 / 29.0 / 1.2
ECOG PS 0 / 1, %	35.0 / 64.4	39.9 / 60.1	43.2 / 56.2
Current / former / never smoker, %	28.8 / 56.4 / 14.7	25.8 / 58.9 / 15.3	24.1 / 63.0 / 13.0
Squamous, %	31.9	32.5	32.1
ITT population	n=374	n=372	n=372
PD-L1 TC ≥1% / ≥25% / ≥50%, %	74.6 / 43.6 / 31.6	79.6 / 43.8 / 29.0	77.7 / 43.5 / 28.8

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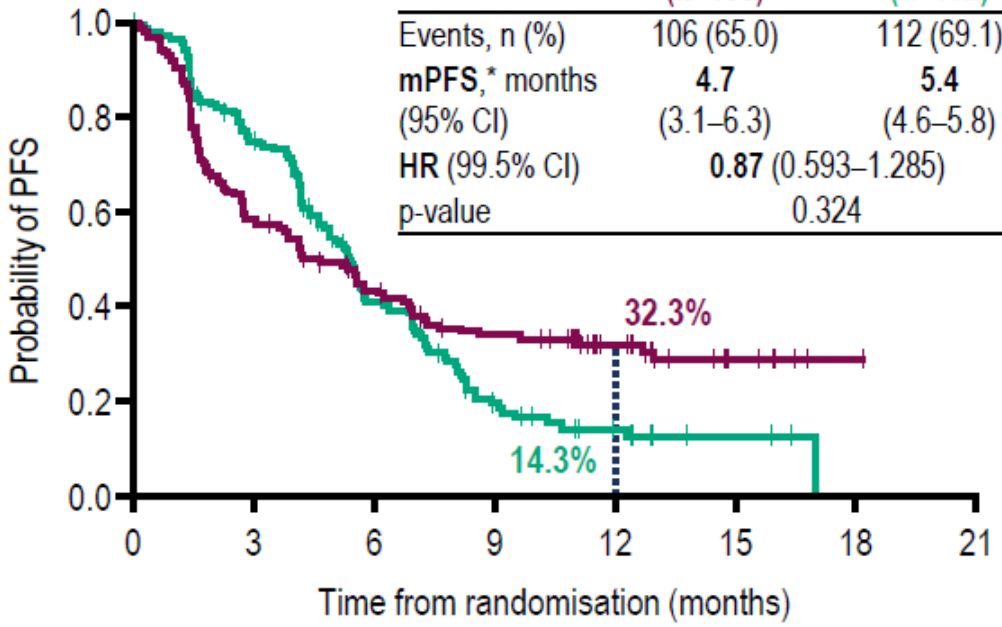
PROGRESSION-FREE SURVIVAL (PD-L1 TC ≥25%)

D vs CT (secondary endpoint)

	Durvalumab (n=163)	Chemotherapy (n=162)
Events, n (%)	106 (65.0)	112 (69.1)
mPFS,* months	**4.7**	**5.4**
(95% CI)	(3.1–6.3)	(4.6–5.8)
HR (99.5% CI)	**0.87** (0.593–1.285)	
p-value	0.324	

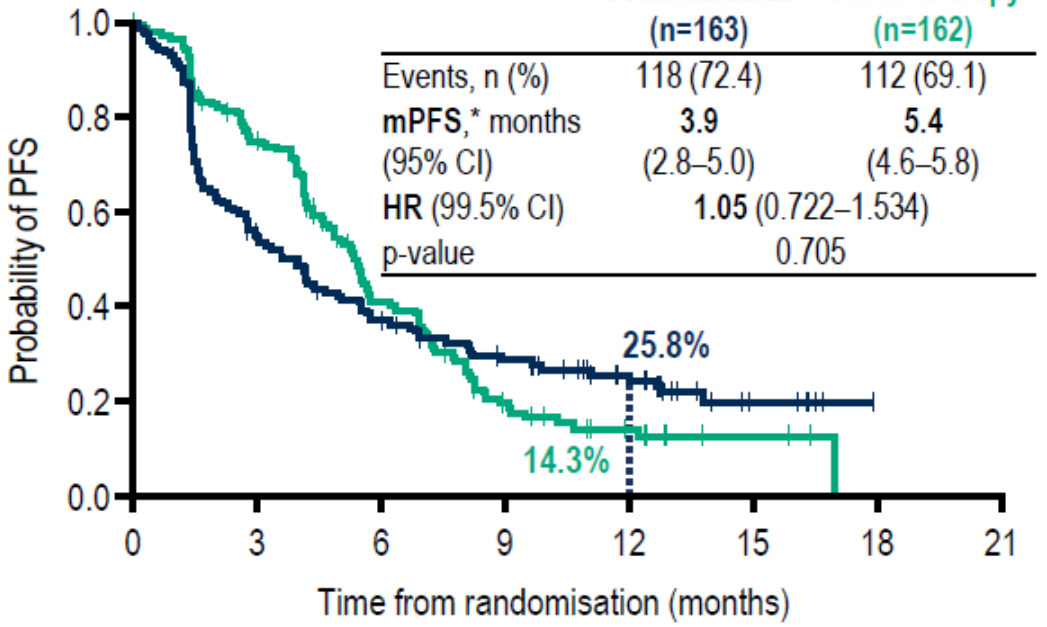


No. at risk

D	163	91	63	46	24	5	1	0
CT	162	107	50	19	9	3	0	0

D+T vs CT (primary endpoint)

	Durvalumab + tremelimumab (n=163)	Chemotherapy (n=162)
Events, n (%)	118 (72.4)	112 (69.1)
mPFS,* months	**3.9**	**5.4**
(95% CI)	(2.8–5.0)	(4.6–5.8)
HR (99.5% CI)	**1.05** (0.722–1.534)	
p-value	0.705	



D+T	163	84	55	39	23	6	0	0
CT	162	107	50	19	9	3	0	0

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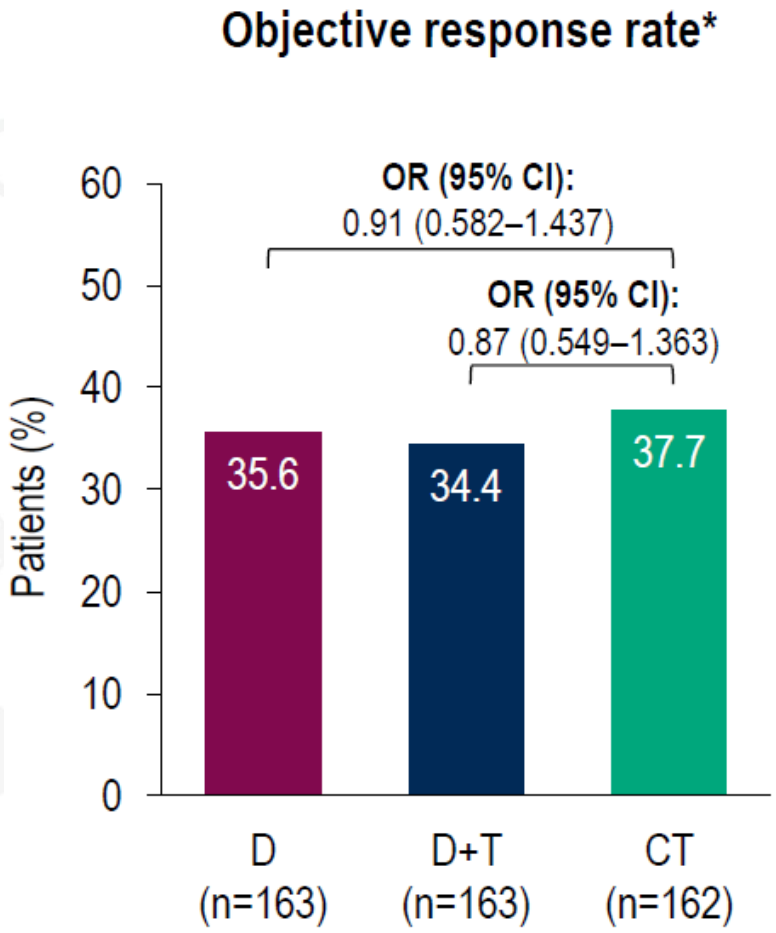
ANTITUMOUR ACTIVITY (PD-L1 TC ≥25%; SECONDARY ENDPOINT)



	Durvalumab (n=163)	Durvalumab + tremelimumab (n=163)	Chemotherapy (n=162)
Best objective response, %			
CR / PR	0.6 / 35.0	0 / 34.4	0 / 37.7
SD ≥6 weeks	30.7	27.6	40.7
Median DoR, months	Not reached	Not reached	4.4
Remaining in response at 6 months, %	66.9	67.6	32.4
Remaining in response at 12 months, %	61.3	54.9	18.0

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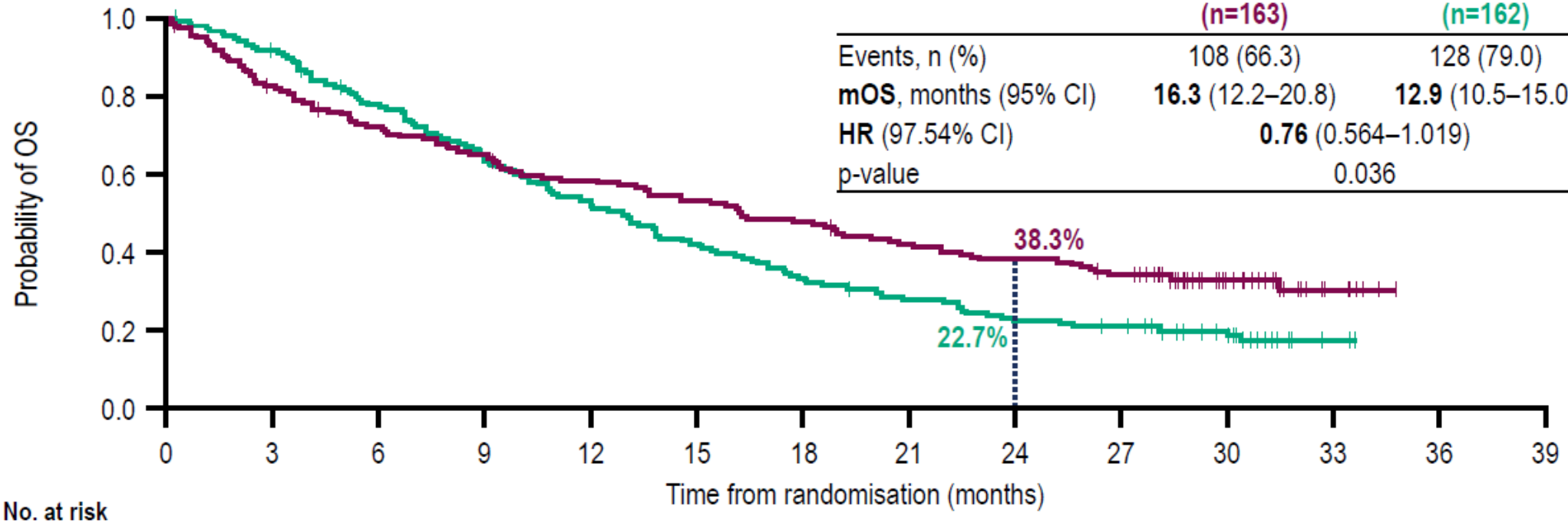
OS: D vs CT (PD-L1 TC ≥25%; PRIMARY ENDPOINT)

	Durvalumab (n=163)	Chemotherapy (n=162)
Events, n (%)	108 (66.3)	128 (79.0)
mOS, months (95% CI)	**16.3** (12.2–20.8)	**12.9** (10.5–15.0)
HR (97.54% CI)	**0.76** (0.564–1.019)	
p-value	0.036	



No. at risk

D	163	134	116	104	93	85	76	66	60	53	25	6	0	0
CT	162	147	123	101	83	67	53	43	35	32	20	2	0	0

	Durvalumab (n=163)	Chemotherapy (n=162)
Received post-discontinuation anticancer therapy, n (%)	73 (44.8)	95 (58.6)
Subsequent immunotherapy	10 (6.1)	64 (39.5)

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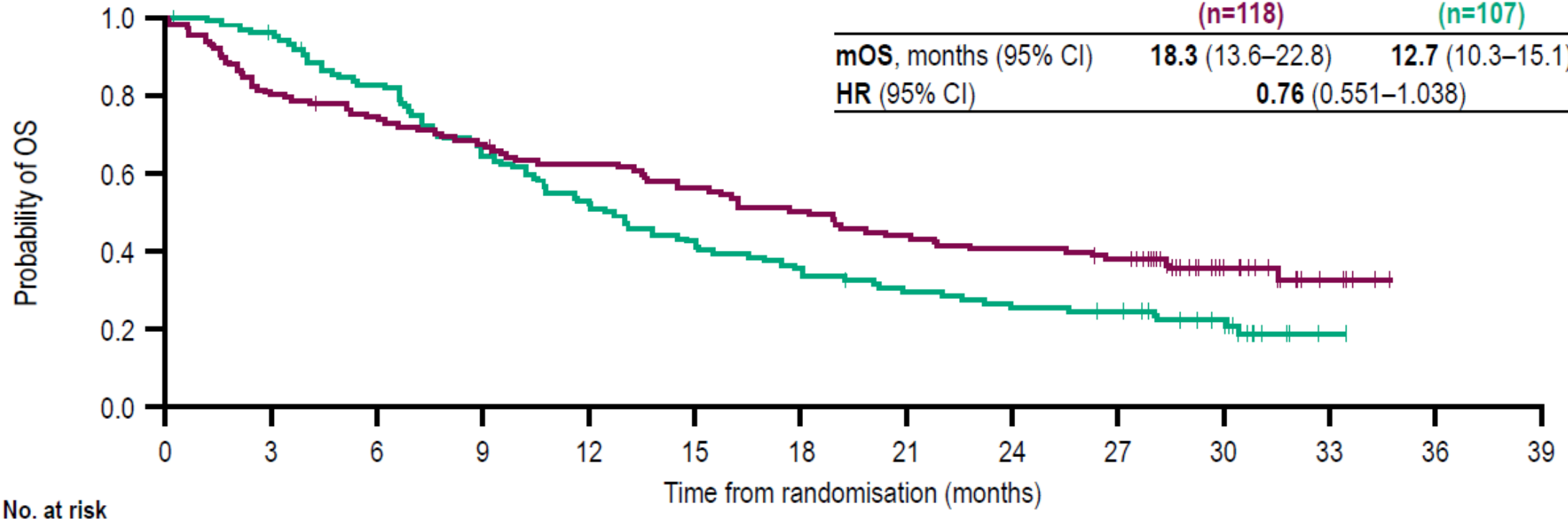
OS: D vs CT (PD-L1 TC ≥50%; EXPLORATORY ANALYSIS)

	Durvalumab (n=118)	Chemotherapy (n=107)
mOS, months (95% CI)	**18.3** (13.6–22.8)	**12.7** (10.3–15.1)
HR (95% CI)	**0.76** (0.551–1.038)	



No. at risk

D	118	96	87	79	72	65	58	51	47	43	18	5	0	0
CT	107	101	86	69	55	44	37	30	26	24	15	1	0	0

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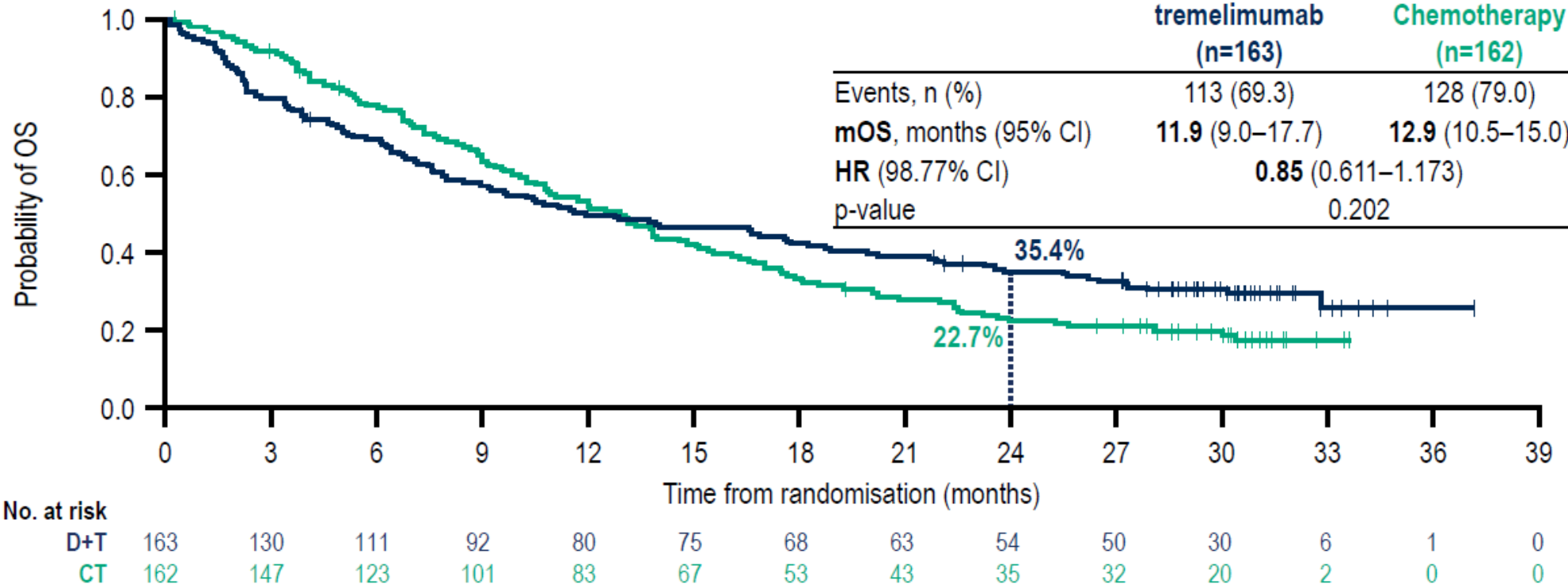
OS: D+T vs CT (PD-L1 TC ≥25%; PRIMARY ENDPOINT)

	Durvalumab + tremelimumab (n=163)	Chemotherapy (n=162)
Events, n (%)	113 (69.3)	128 (79.0)
mOS, months (95% CI)	**11.9** (9.0–17.7)	**12.9** (10.5–15.0)
HR (98.77% CI)	**0.85** (0.611–1.173)	
p-value	0.202	



No. at risk													
D+T	163	130	111	92	80	75	68	63	54	50	30	6	1	0
CT	162	147	123	101	83	67	53	43	35	32	20	2	0	0

	Durvalumab + tremelimumab (n=163)	Chemotherapy (n=162)
Received post-discontinuation anticancer therapy, n (%)	61 (37.4)	95 (58.6)
Subsequent immunotherapy	5 (3.1)	64 (39.5)

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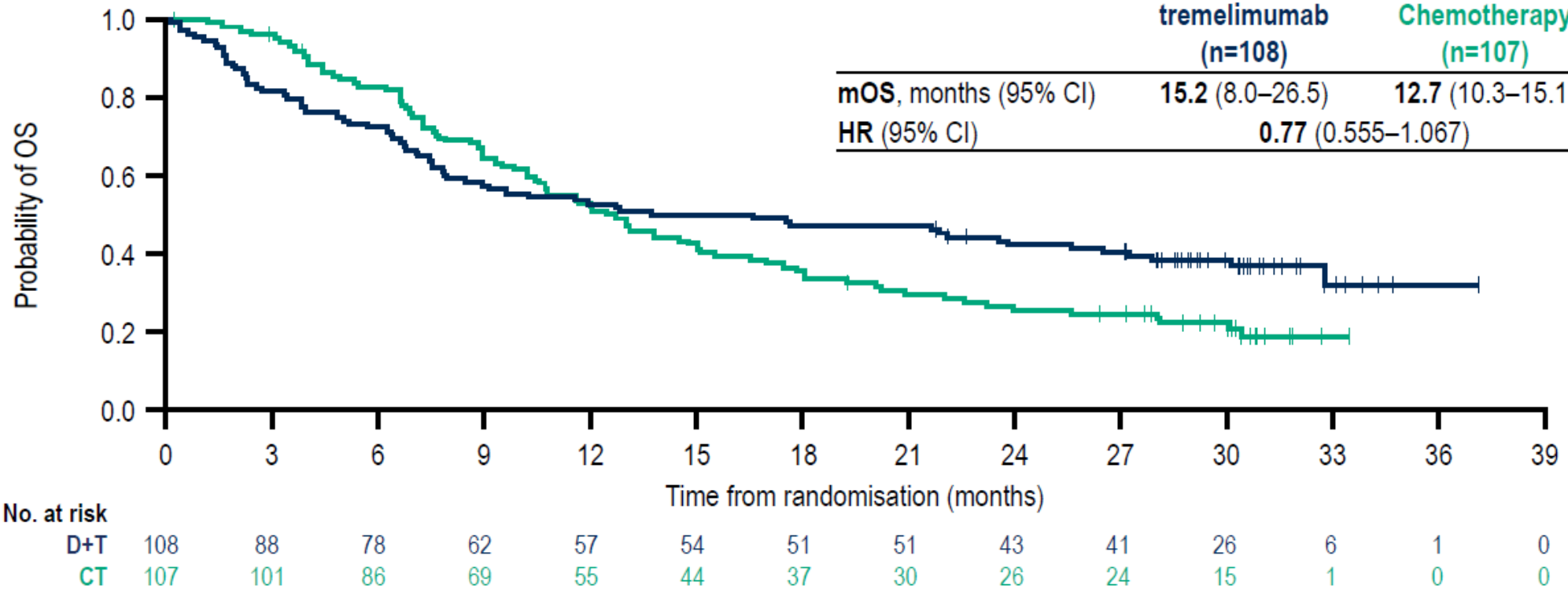
OS: D+T vs CT (PD-L1 TC ≥50%; EXPLORATORY ANALYSIS)

	Durvalumab + tremelimumab (n=108)	Chemotherapy (n=107)
mOS, months (95% CI)	**15.2** (8.0–26.5)	**12.7** (10.3–15.1)
HR (95% CI)	**0.77** (0.555–1.067)	



No. at risk													
D+T	108	88	78	62	57	54	51	51	43	41	26	6	1	0
CT	107	101	86	69	55	44	37	30	26	24	15	1	0	0

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BLOOD TUMOUR MUTATIONAL BURDEN ANALYSIS

- tTMB ≥10 mut/Mb cutoff used to define high TMB in CheckMate 227 for the primary PFS endpoint[1]
- This correlated with a bTMB ≥16 mut/Mb cutoff in MYSTIC (overall tTMB vs bTMB correlation: rho=0.6)

TMB evaluable dataset

	Durvalumab (n=374)	Durvalumab + tremelimumab (n=372)	Chemotherapy (n=372)
tTMB, n (%)	145 (38.8)	164 (44.1)	151 (40.6)
bTMB, n (%)	286 (76.5)	268 (72.0)	255 (68.5)

Large bTMB dataset: 809 samples (72.4% of patients)

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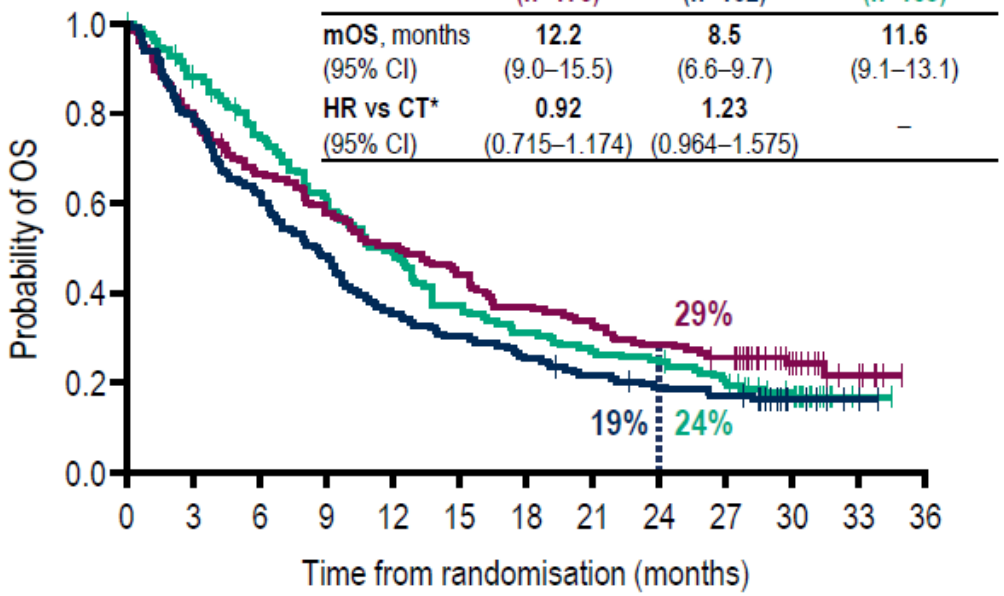
OS: bTMB SUBGROUPS (EXPLORATORY ANALYSIS)

bTMB <16 mut/Mb population

	Durvalumab (n=175)	Durvalumab + tremelimumab (n=162)	Chemotherapy (n=153)
mOS, months (95% CI)	12.2 (9.0–15.5)	8.5 (6.6–9.7)	11.6 (9.1–13.1)
HR vs CT* (95% CI)	0.92 (0.715–1.174)	1.23 (0.964–1.575)	–

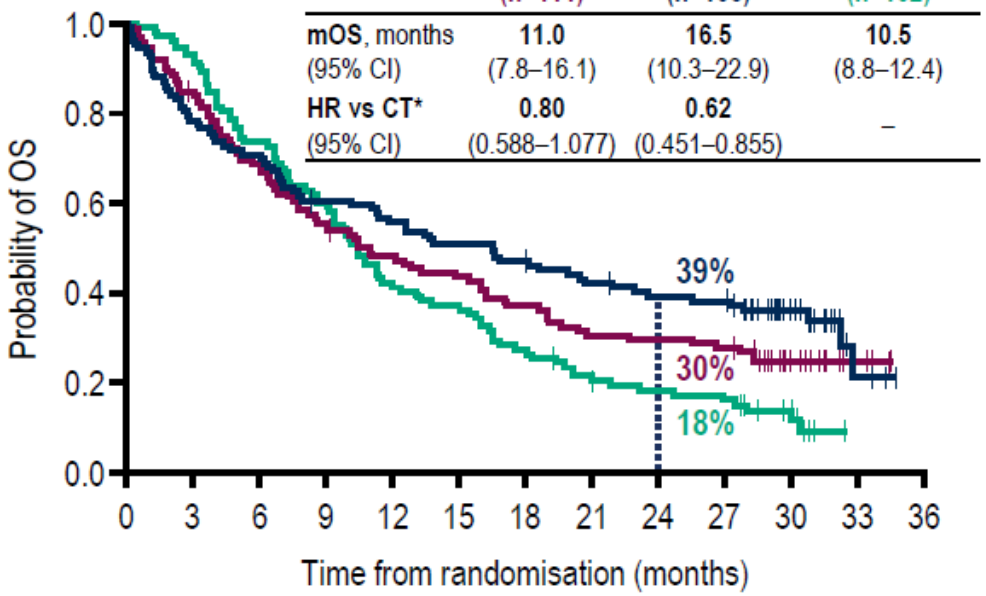


No. at risk

D	175	138	112	97	85	74	62	55	48	42	17	6	0
D+T	162	128	101	78	57	49	41	34	29	26	12	3	0
CT	153	132	111	90	73	55	46	40	36	29	15	1	0

bTMB ≥16 mut/Mb population

	Durvalumab (n=111)	Durvalumab + tremelimumab (n=106)	Chemotherapy (n=102)
mOS, months (95% CI)	11.0 (7.8–16.1)	16.5 (10.3–22.9)	10.5 (8.8–12.4)
HR vs CT* (95% CI)	0.80 (0.588–1.077)	0.62 (0.451–0.855)	–



	111	93	75	61	52	47	40	33	32	30	14	3	0
	106	83	75	63	58	53	49	43	39	38	20	3	0
	102	95	75	61	43	38	28	21	17	16	8	0	0

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OS: bTMB SUBGROUPS (EXPLORATORY ANALYSIS)

bTMB <16 mut/Mb population

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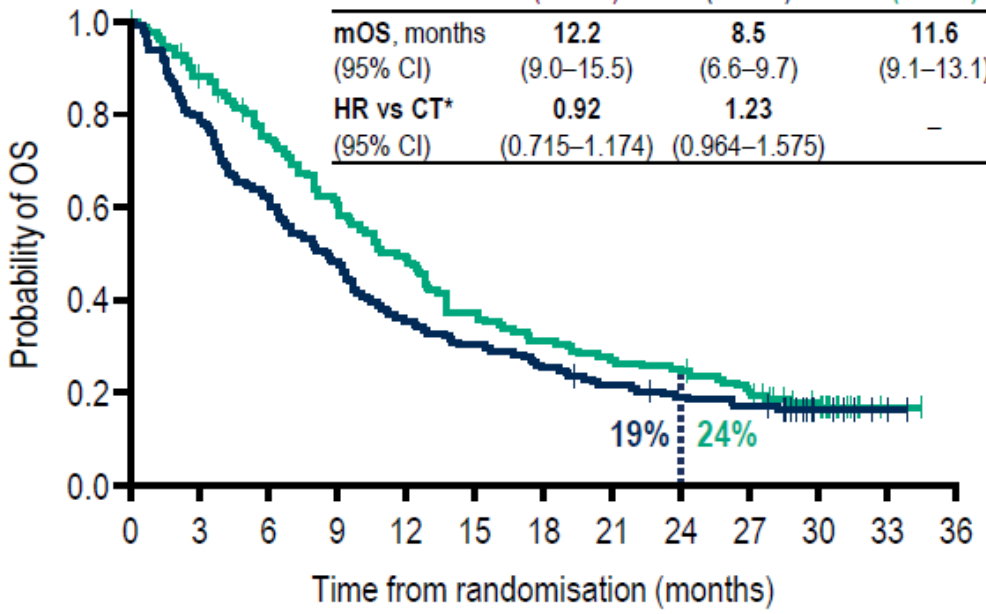
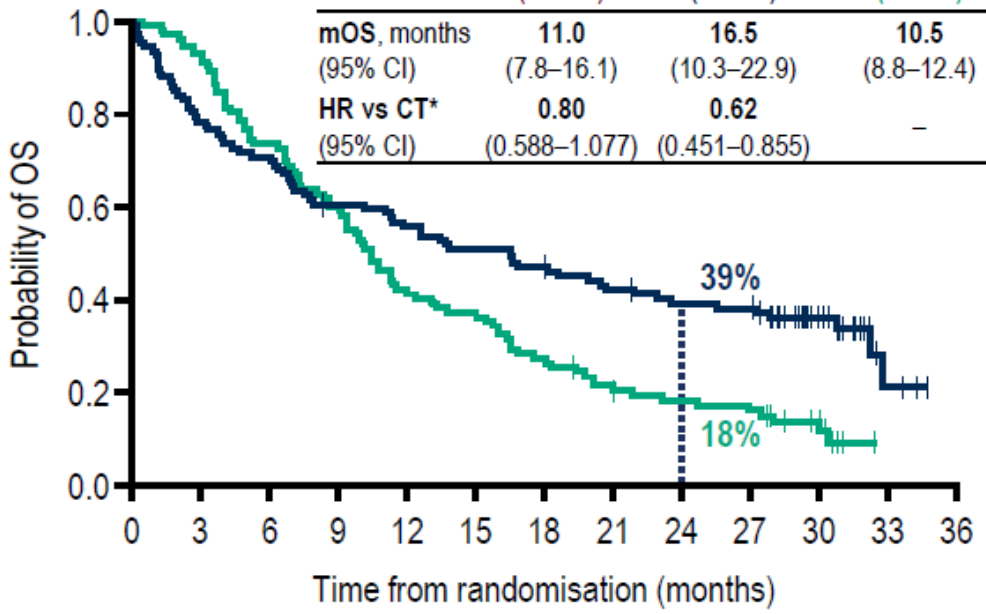


No. at risk

D	175	138	112	97	85	74	62	55	48	42	17	6	0
D+T	162	128	101	78	57	49	41	34	29	26	12	3	0
CT	153	132	111	90	73	55	46	40	36	29	15	1	0

bTMB ≥16 mut/Mb population

	Durvalumab (n=111)	Durvalumab + tremelimumab (n=106)	Chemotherapy (n=102)
mOS, months (95% CI)	11.0 (7.8–16.1)	16.5 (10.3–22.9)	10.5 (8.8–12.4)
HR vs CT* (95% CI)	0.80 (0.588–1.077)	0.62 (0.451–0.855)	–



	111	93	75	61	52	47	40	33	32	30	14	3	0
	106	83	75	63	58	53	49	43	39	38	20	3	0
	102	95	75	61	43	38	28	21	17	16	8	0	0

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CONCLUSIONS

- MYSTIC did not meet primary endpoints of OS and PFS in patients with first-line mNSCLC with PD-L1 TC ≥25%
  - **Durvalumab vs chemotherapy:** while statistical significance was not achieved, a clinically meaningful improvement in OS was observed
    - HR 0.76 (97.54% CI 0.564–1.019); p=0.036
    - 2-year OS: 38.3% vs 22.7%
    - Activity in line with the anti-PD-1/PD-L1 class in first-line mNSCLC
  - **Durvalumab + tremelimumab vs chemotherapy:** OS was not improved
    - HR 0.85 (98.77% CI 0.611–1.173); p=0.202
- In this exploratory analysis in a large dataset, high bTMB (≥16 mut/Mb cutoff) was associated with better OS for durvalumab + tremelimumab vs chemotherapy
    - HR 0.62 (95% CI 0.451–0.855); 2-year OS: 39% vs 18%
- Safety and tolerability profiles of durvalumab and durvalumab + tremelimumab were consistent with data from previous trials[1–7]

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Effects of antibiotics and proton pump inhibitors in NSCLC patients treated with atezolizumab or docetaxel

Pooled analysis of the OAK and POPLAR trials

M. Chalabi,[1] A. Cardona,[2] D. Nagarkar,[3] A. Dhawahir Scala,[2] M. Albert,[3] M. Kok,[1] T. B. Powles[4], F. Herrera[5]

On behalf of the imCORE working group of early career investigators

[1]Netherlands Cancer Institute, [2]F. Hoffmann-La Roche, [3]Genentech, [4]Barts Cancer Institute, [5]Ludwig Institute for Cancer Research

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The microbiome in anticancer therapies

- Gut microbiota play a key role in mediating tumor responses to both chemotherapy and immune checkpoint inhibition (ICI) in mouse models
- Anticancer treatments and co-medications such as antibiotics (ATB) and proton pump inhibitors (PPI) alter the gut microbiome
- Studies in patients responding to ICI have shown:
  - higher diversity of the gut (but not oral) microbiome at baseline
  - enrichment of particular bacteria species

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Do ATB and PPI compromise ICI efficacy?

Multiple reports show ATB use within predefined windows compromises the efficacy of ICI across tumor types

- Melanoma
- NSCLC
- Renal cell cancer
- Urothelial cancer

Derosa et al., Ann Oncol 2018; Do et al., ASCO 2018; Elkrief, in press; Huemer et al., Oncotarget 2018; Kaderbhai et al., Anticancer Res 2017; Lalani et al., ASCO GU 2018, Matson et al., Science 2018; Routy et al., Science 2018; Tinsley et al. ASCO 2018;

No evidence of PPI compromising clinical benefit of ICI

- NSCLC
- Renal cell cancer
- Urothelial cancer
- Ovarian cancer

Mukherjee et al., J Oncol Pharm Pract 2018; Routy et al., Science 2018

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Design and objectives: current study

- Retrospective analysis of patients from POPLAR and OAK studies who received ATB or PPI within 30 days before and after beginning treatment
- **Objectives**: analyze the effect of ATBs or PPIs on overall survival (OS) and progression-free survival (PFS)
- Statistical analysis using univariate and multivariate Cox models
  - Risk factors with a p-value < 0.15 were further evaluated in a multivariate analysis where the best model was chosen via variable selection

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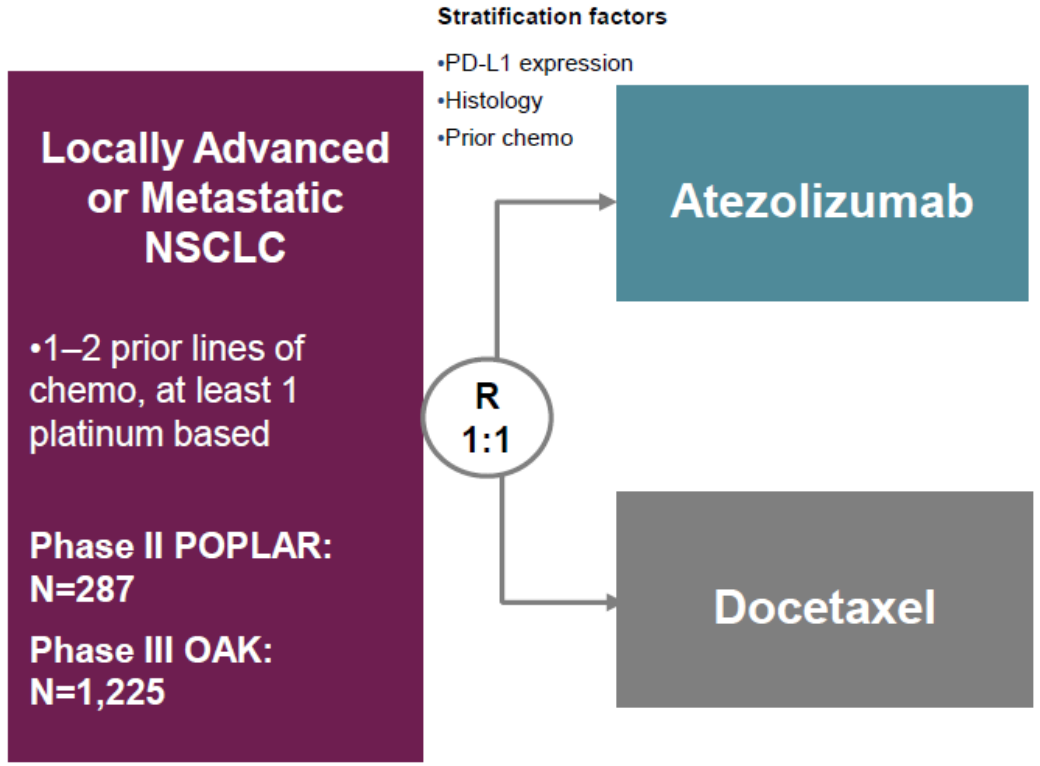
OAK and POPLAR studies: improved survival with atezolizumab vs docetaxel (n=1,512)



POPLAR: improved survival for atezolizumab vs docetaxel

primary analysis (n=287):[1]
HR 0.73 [95% CI 0.53–0.99]; p=0.04

OAK: improved survival for atezolizumab vs docetaxel

primary analysis (n=850):[2]
HR 0.73 [95% CI 0.62–0.87]; p<0.01

secondary analysis (n=1,225):[2,3]
HR 0.80 [95% CI 0.70–0·92]; p<0.01

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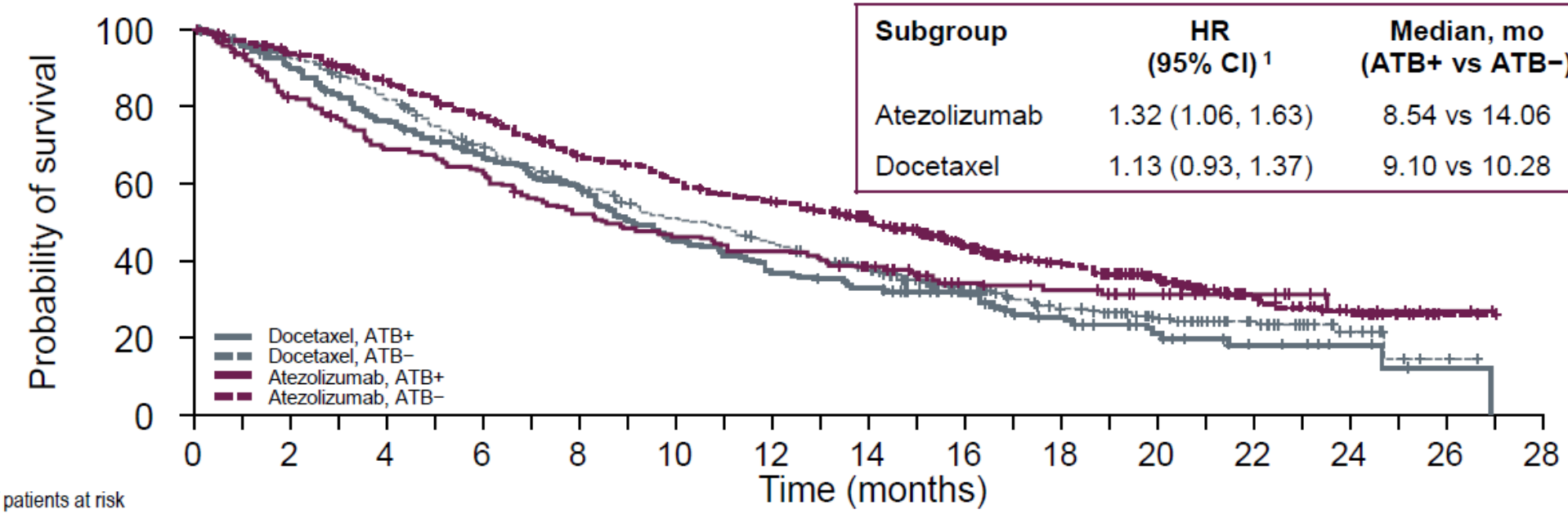
Shorter OS observed in the atezolizumab ATB+ group



Subgroup	HR (95% CI) [1]	Median, mo (ATB+ vs ATB−)
Atezolizumab	1.32 (1.06, 1.63)	8.54 vs 14.06
Docetaxel	1.13 (0.93, 1.37)	9.10 vs 10.28

No. of patients at risk

Docetaxel, ATB+	202	182	152	130	114	87	71	63	46	29	17	9	5	1	0
Docetaxel, ATB−	553	474	411	344	287	244	212	174	108	76	53	28	11	2	0
Atezolizumab, ATB+	169	134	111	101	83	74	68	56	37	33	26	13	6	2	0
Atezolizumab, ATB−	588	546	493	437	374	336	305	262	178	136	90	41	22	2	0

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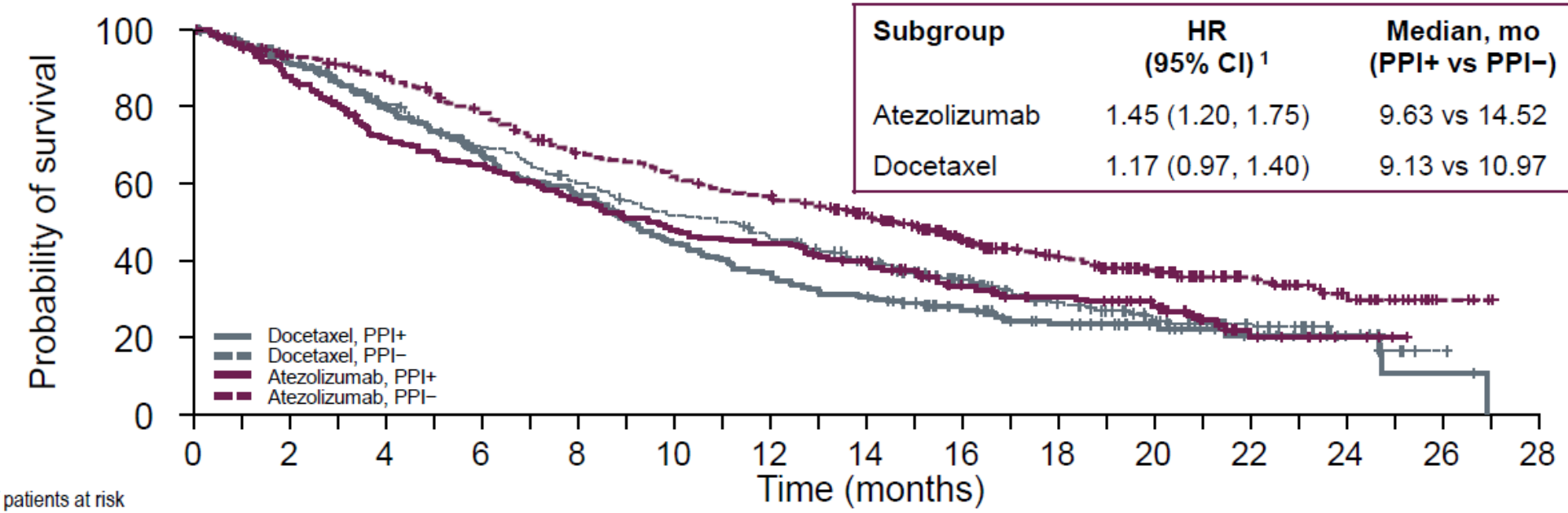
Shorter OS observed in the atezolizumab PPI+ group



Subgroup	HR (95% CI) [1]	Median, mo (PPI+ vs PPI−)
Atezolizumab	1.45 (1.20, 1.75)	9.63 vs 14.52
Docetaxel	1.17 (0.97, 1.40)	9.13 vs 10.97

No. of patients at risk

Docetaxel, PPI+	260	234	201	169	139	106	86	73	49	32	22	11	5	2	0
Docetaxel, PPI−	495	422	362	305	262	225	197	164	105	73	48	26	11	1	0
Atezolizumab, PPI+	234	201	160	145	124	106	98	81	57	46	35	10	4	0	0
Atezolizumab, PPI−	523	479	444	393	333	304	275	237	158	123	81	44	24	4	0

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Conclusions

- Together with previously published data, this retrospective analysis suggests that ATB or PPI use may be associated with lower efficacy of ICI in patients with metastatic NSCLC
- ATB or PPI use may have a prognostic effect regardless of treatment
- Class effect: independent validation of these results needed from previously published RCTs in lung cancer and other tumor types
- Future research on cancer immunotherapy should include the effects of concomitant medications and the role of the microbiota

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Fast progression in patients treated with a checkpoint inhibitor vs chemotherapy in OAK, a Phase III trial of atezolizumab vs docetaxel in 2L+ NSCLC

David R. Gandara,[1] Martin Reck,[2] Stefanie Morris,[3] Andres Cardona,[3] Diana Mendus[4], Marcus Ballinger,[4] Achim Rittmeyer[5]

[1]UC Davis Comprehensive Cancer Center, Sacramento, CA, USA; [2]German Center for Lung Research, LungenClinic, Grosshansdorf, Germany; [3]F. Hoffmann-La Roche Ltd., Basel, Switzerland; [4]Genentech, Inc., South San Francisco, CA, USA; [5]Lungenfachklinik Immenhausen, Immenhausen, Germany

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Gandara, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

Background

- Hyperprogressive disease (HPD) is an uncommon, accelerated-progression pattern reported in patients treated with checkpoint inhibitor monotherapy[1]
  - Defined as progressive disease (PD) with ≥ 2-fold increase in tumour growth rate (TGR) from baseline to first evaluation
  - Assessment requires availability of pre-treatment scans to determine TGR
  - In NSCLC, variably associated with older age (> 65 years), *EGFR* mutation, *MDM2* amplification, and poor overall survival[1,2]
- Fast progression (FP) is a composite measure that incorporates rapid early disease progression or early death due to PD as a surrogate for the HPD phenomenon
  - Provides a model for trials in which 2 pre-treatment scans are not available
- Phase III OAK study in patients with ≥ 2L NSCLC (n = 850) showed clinically significant overall survival (OS) with atezolizumab vs docetaxel (median OS, 13.8 vs 9.6 months; hazard ratio [HR], 0.73)[3]

Here we report:

1) Occurrence of FP in patients treated with atezolizumab vs docetaxel from the OAK study
2) Association of efficacy with baseline factors potentially prognostic for FP, including early failure of the preceding treatment (≤ 6 months of treatment start)

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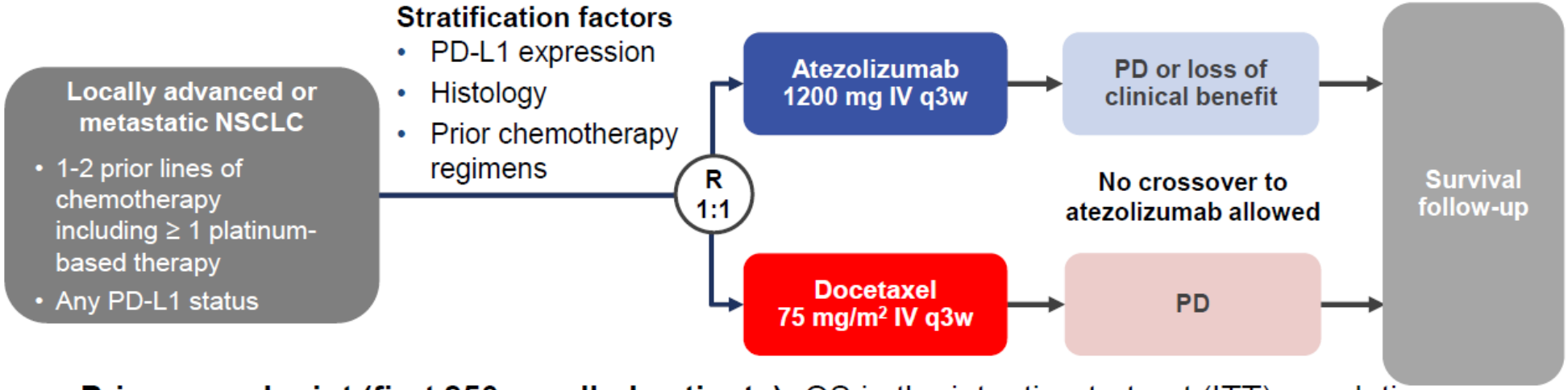
OAK Fast Progressor Post Hoc Analysis



- **Primary endpoint (first 850 enrolled patients):** OS in the intention-to-treat (ITT) population
- Fast progressors were defined as patients treated with atezolizumab or docetaxel and experienced:
  - ≥ 50% increase in the sum of long diameters (SLD) within 6 weeks from baseline ***or***
  - Death due to disease progression within 12 weeks from baseline for patients without a response assessment
- Separately, OS was evaluated according to baseline factors potentially prognostic for FP

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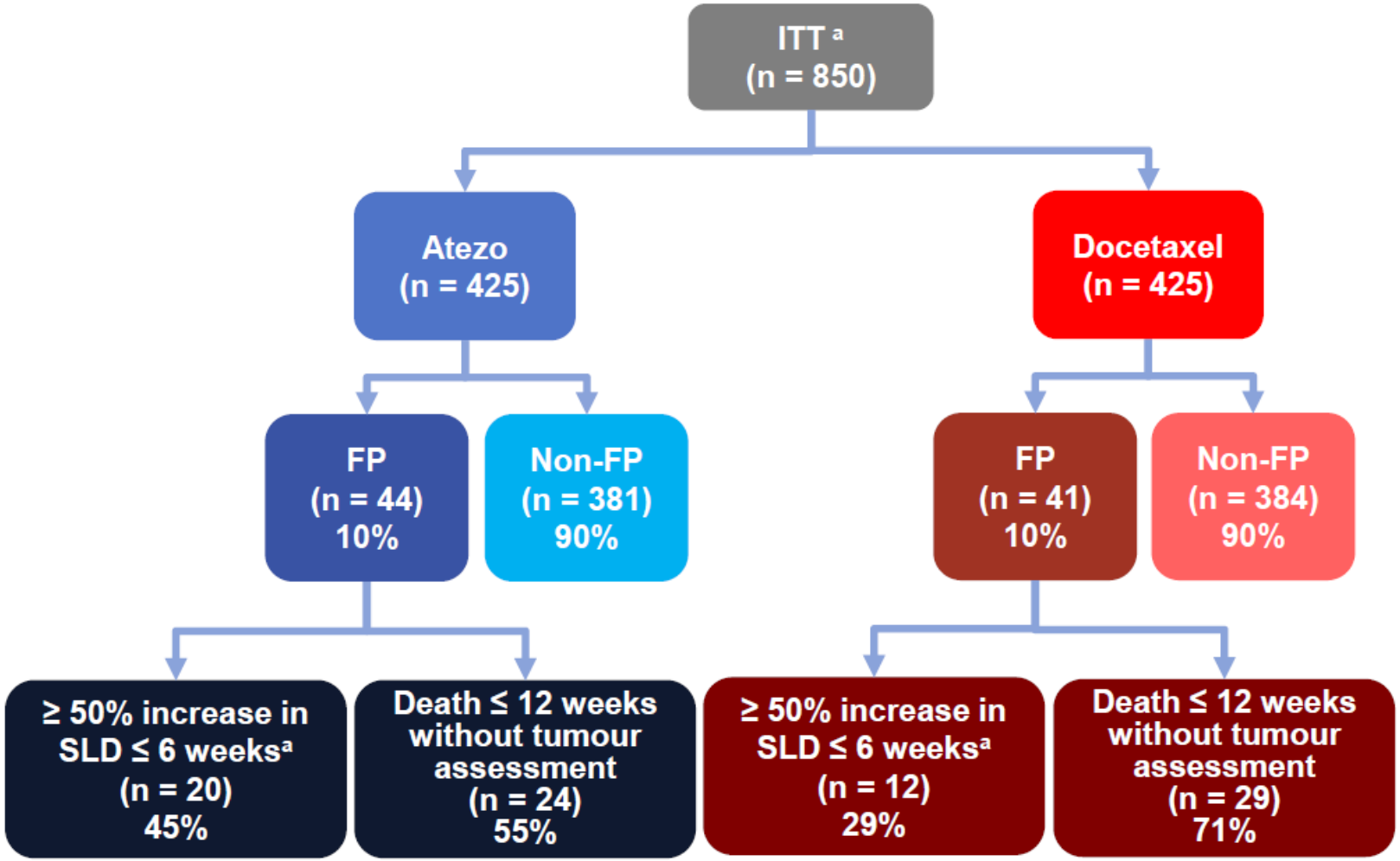
OAK Fast Progressor Patient Population



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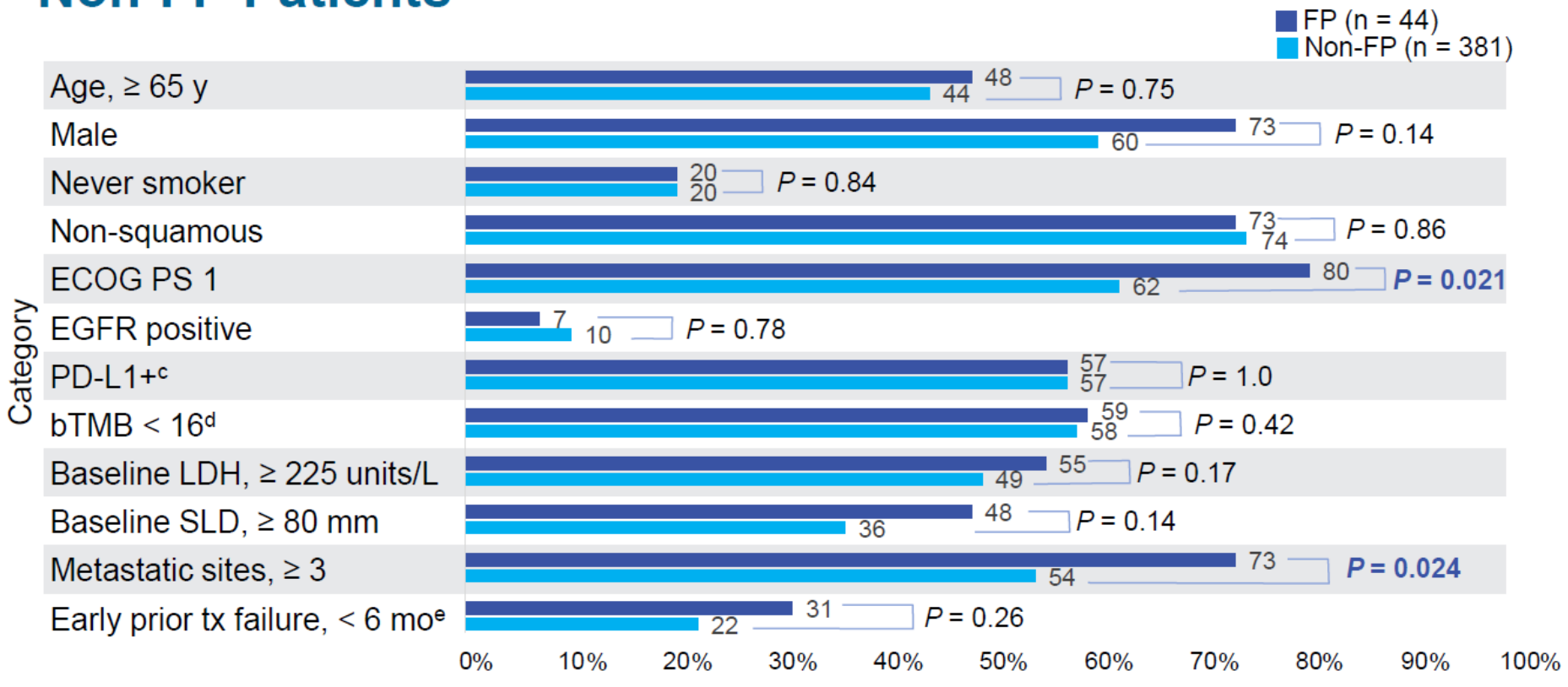
Baseline Factors of Atezolizumab FP and Non-FP Patients[a,b]



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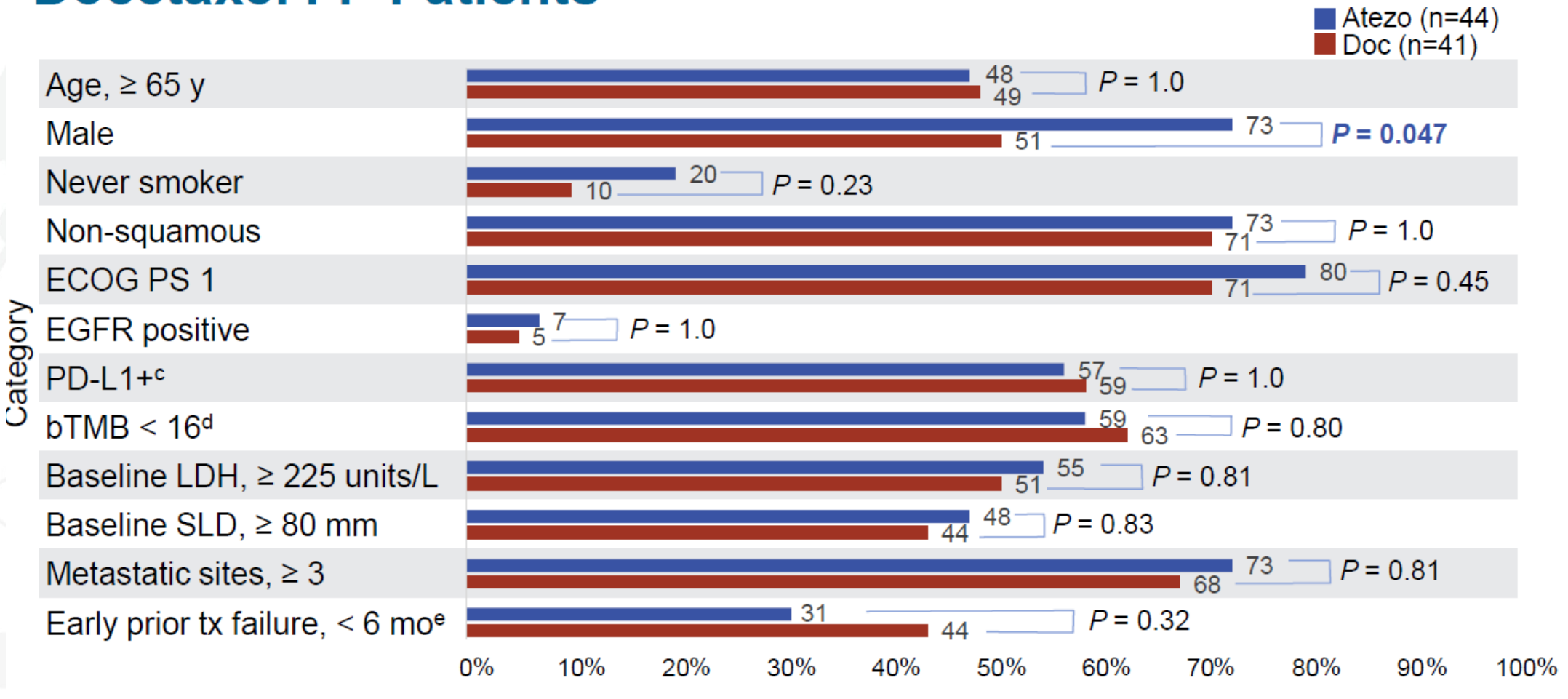
Gandara, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

Baseline Factors of Atezolizumab FP and Docetaxel FP Patients[a,b]



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Gandara, Annals of Oncology (2018) 29 (suppl_10): x39-x43. 10.1093/annonc/mdy511

Conclusions

- Similar rates of FP occurred in the atezolizumab and docetaxel arms
- Characteristics and outcomes of patients with FP were similar for atezolizumab vs docetaxel
  - FP in the atezolizumab arm was associated with ≥ 3 metastatic sites and ECOG PS but not other baseline factors
  - OS was similar for atezolizumab vs docetaxel in patients experiencing radiographic FP
- OS benefit with atezolizumab vs docetaxel was observed in all sub-groups, including those expected to be prognostic for aggressive disease, as well as those factors which were not

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Questions

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Question 1

- Hyperprogression thought to be due to checkpoint inhibitor immunotherapy has been variably associated with:
  - A. MDM2 amplification
  - B. EGFR mutation
  - C. older age (>65 years)
  - D. All of the above
  - E. None of the above

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Question 2

- In the MYSTIC trial, investigators presented tumor mutation burden evaluated through blood samples (bTMB). What was the cut off (mutations/Mb) associated with improved survival of durvalumab/tremelimumab versus chemotherapy:
  - A. 10
  - B. 15
  - C. 16
  - D. 20
  - E. 25

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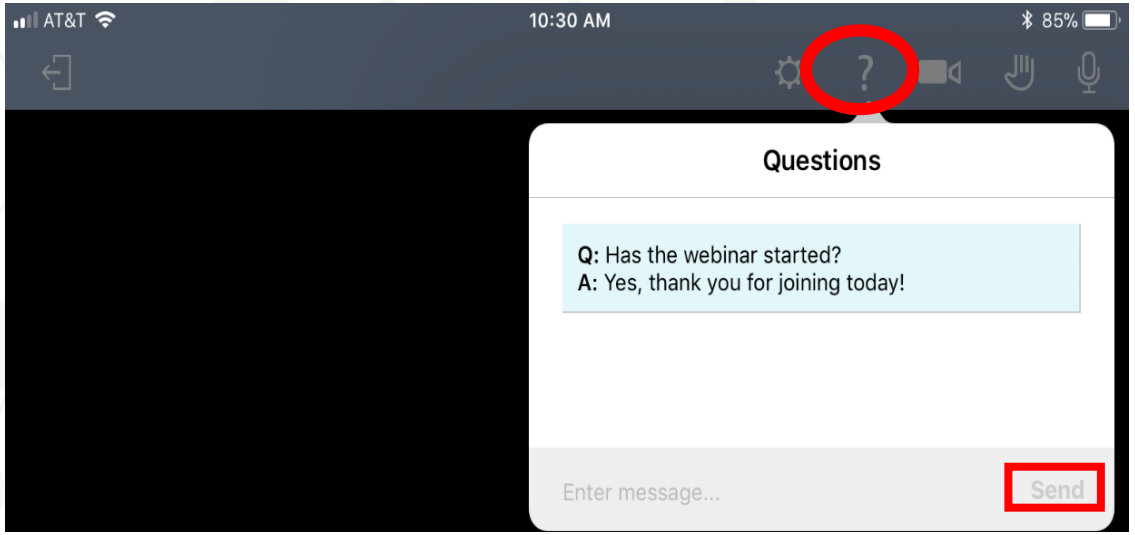
Question and Answer

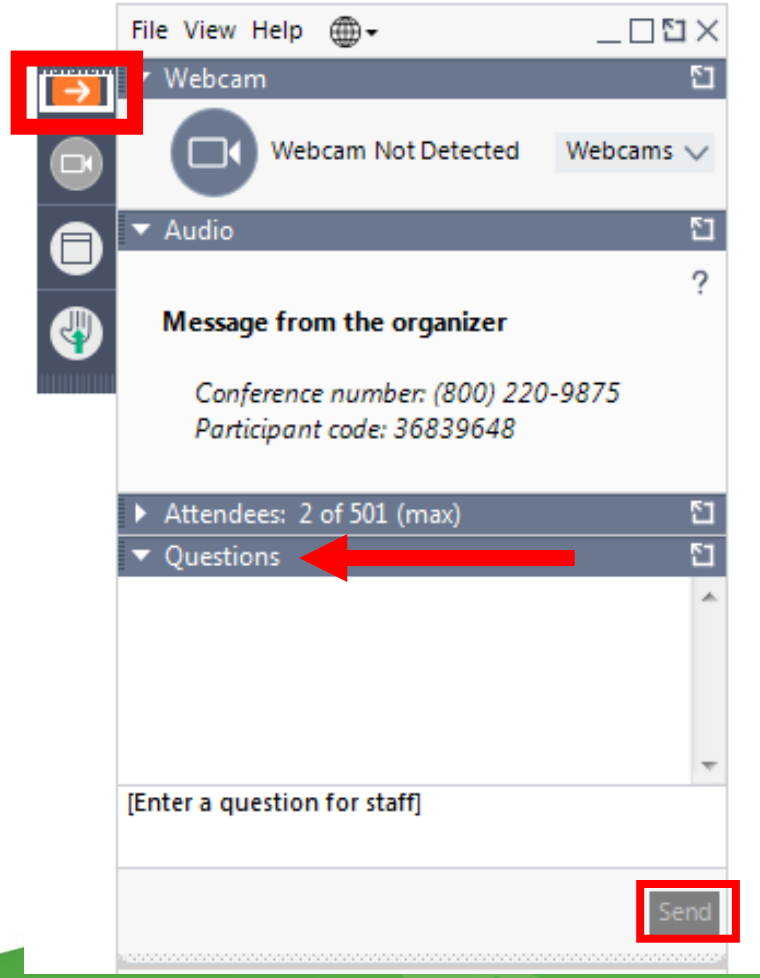
To submit a question:

Type your question in the Questions box of your webinar panel.

Mobile View



Desktop View



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ACI Webinar Series

SAVE THE DATE!

Thursday, May 23, 2019

3:00-4:00 p.m. CST

Faculty Experts:

Robert Canter, MD, MAS, FACS – *University of California Davis Health System*

Robert Ferris, MD, PhD – *UPMC Hillman Cancer Center*

To register, please visit: sitcancer.org/education/aci/online

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