Advances in Immunotherapy in Lung Cancer Treatment

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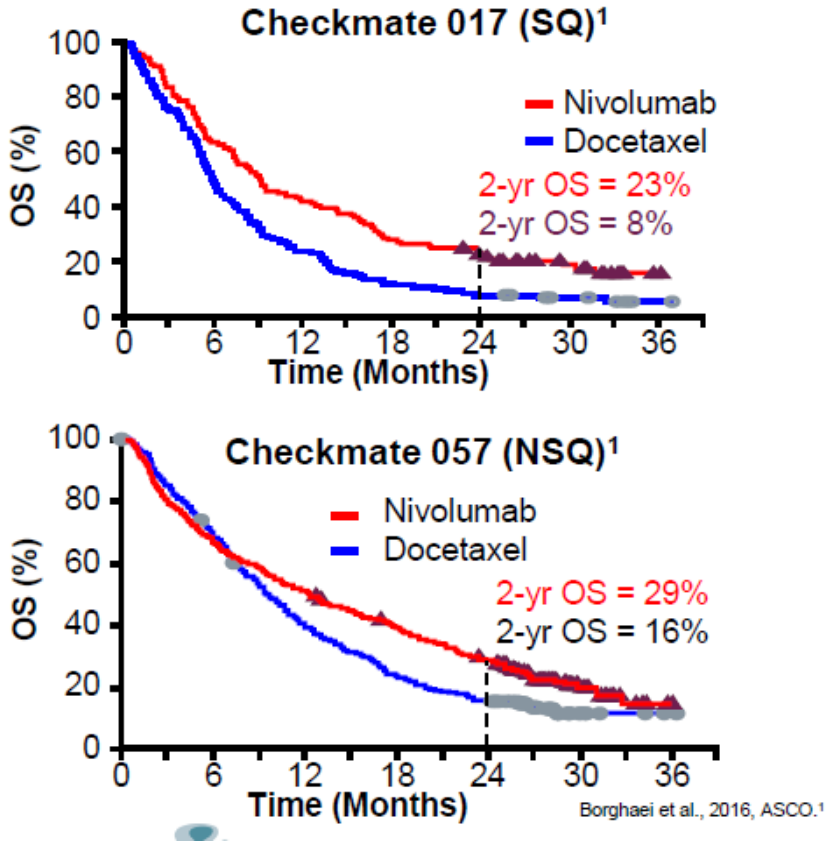
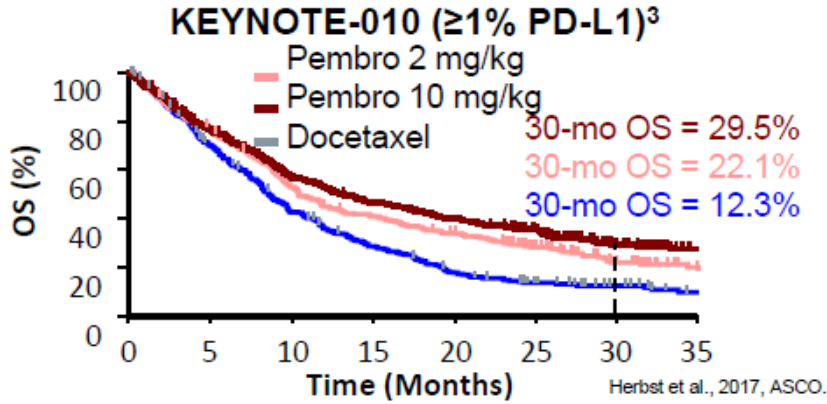
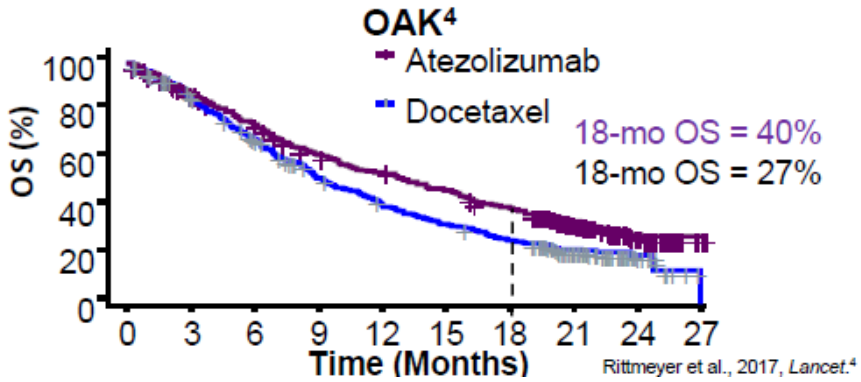
Immunotherapy In 2nd or later line

Check point inhibitors in 2nd Line Tx







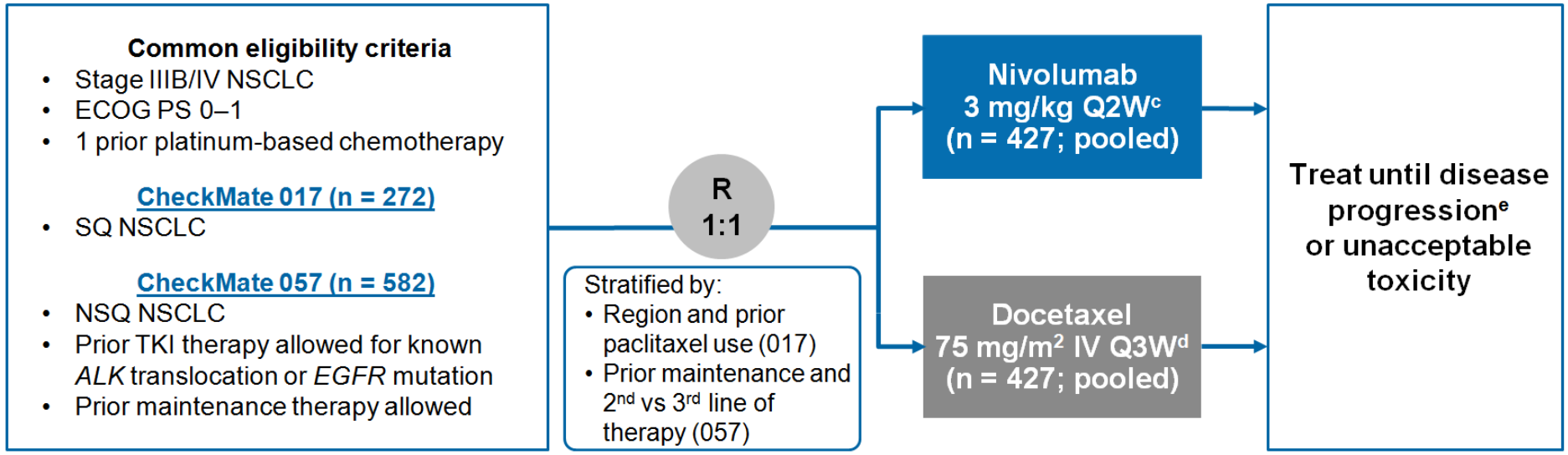
Comparison of Response Rates in Second-Line Studies

STUDY	ORR
CheckMate 017	20%
CheckMate 057	19%
KEYNOTE 001	19.4%
KEYNOTE 010	21.2%
OAK	15%
POPLAR	14%

Data were retrieved from separate trials, respectively, and not intended for direct comparisons

Five-Year Outcomes From the Randomized, Phase 3 Trials CheckMate 017/057: Nivolumab vs Docetaxel in Previously Treated NSCLC

CheckMate 017 and 057 Study Design

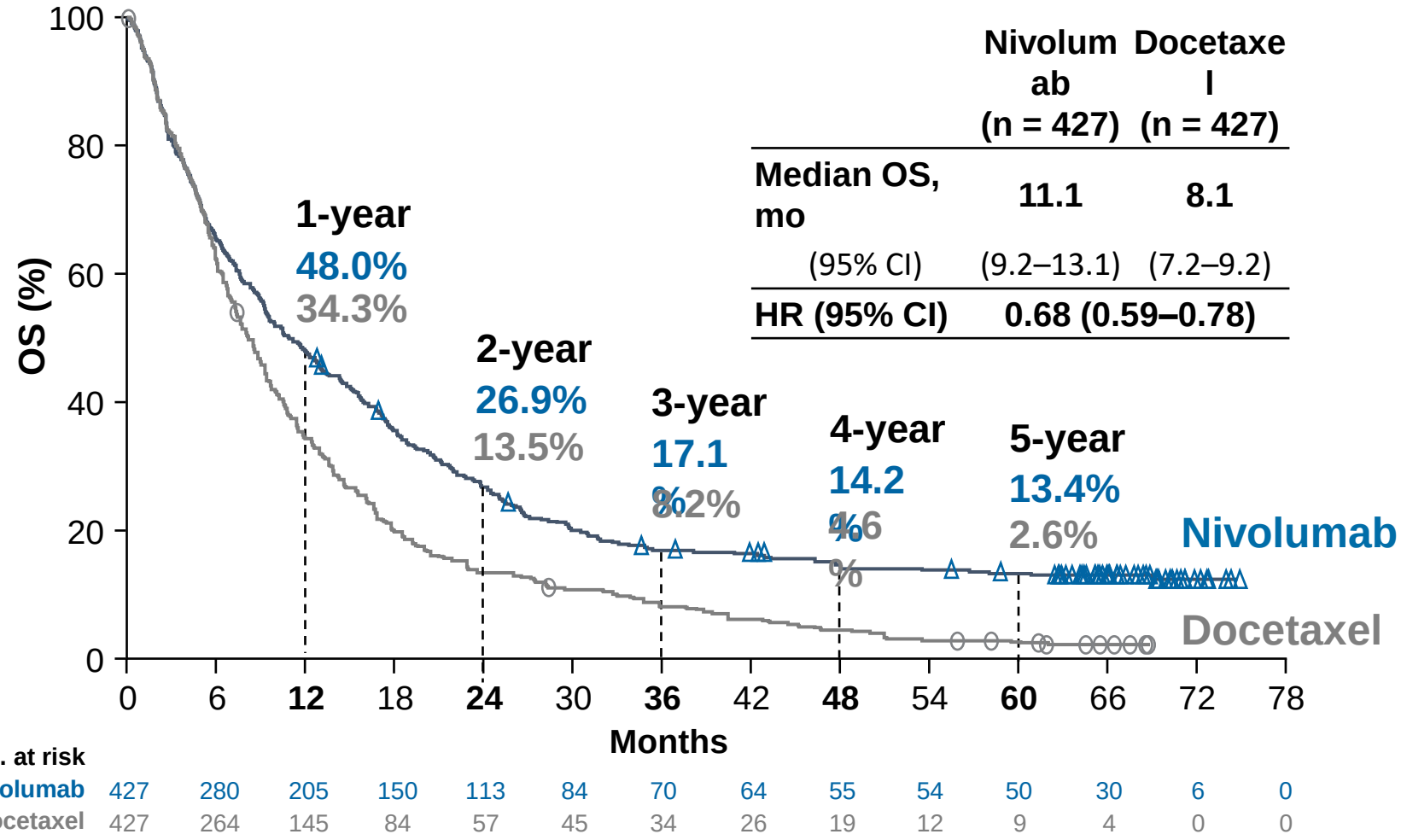


Primary endpoint: OS

Additional endpoints: PFS,[f] ORR,[f] efficacy by tumor PD-L1 expression, safety, PROs

CheckMate017/057
2019 WCLC

5-Year Pooled OS: Nivolumab vs Docetaxel[a]



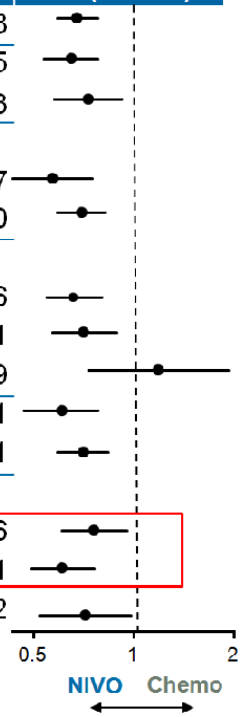
	Nivolumab (n = 427)	Docetaxel (n = 427)
Median OS, mo	**11.1**	**8.1**
(95% CI)	(9.2–13.1)	(7.2–9.2)
HR (95% CI)	**0.68 (0.59–0.78)**	

- 5-year OS rate (nivolumab vs docetaxel): 12.3% vs 3.6% (CheckMate 017; SQ); 14.0% vs 2.1% (CheckMate 057; NSQ)

[a]Minimum follow-up for OS: 62.6 months (CheckMate 017), 62.7 months (CheckMate 057).

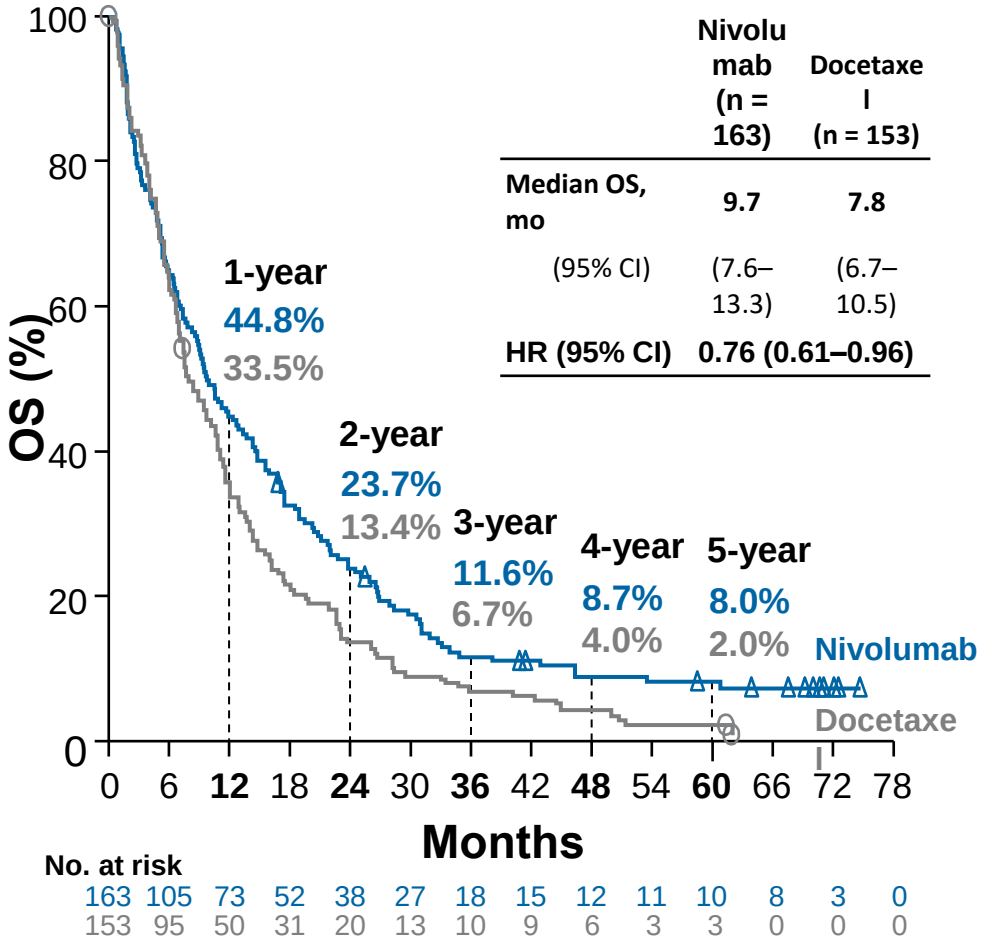
OS Subgroup Analysis: Nivolumab vs Docetaxel

Subgroup		Nivolumab mOS, mo	Docetaxel mOS, mo	HR
Overall	**(n = 854)**	11.1	8.1	0.68
Male	(n = 527)	10.4	7.4	0.65
Female	(n = 327)	12.1	9.2	0.73
ECOG PS[a]				
0	(n = 243)	18.4	13.3	0.57
≥ 1	(n = 608)	8.6	6.7	0.70
Age, y				
< 65	(n = 491)	11.5	7.8	0.66
≥ 65	(n = 363)	10.2	8.6	0.71
≥ 75	(n = 72)	7.2	9.2	1.19
SQ	(n = 269)	9.2	6.0	0.61
NSQ	(n = 585)	12.2	9.5	0.71
PD-L1				
< 1%	(n = 316)	9.7	7.8	0.76
≥ 1%	(n = 364)	13.4	8.5	0.61
Non-evaluable	(n = 174)	9.3	7.7	0.72



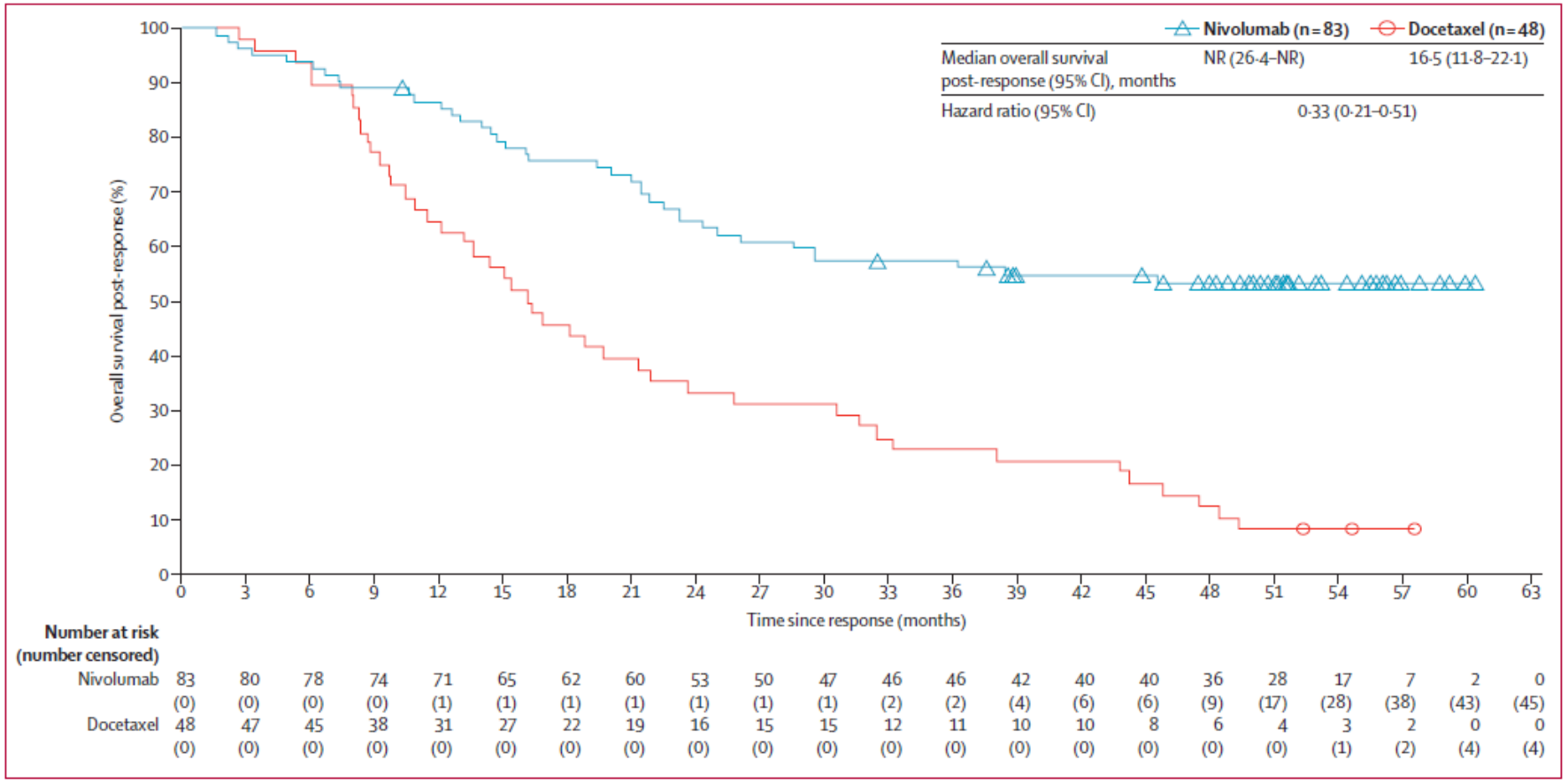
PD-L1 < 1%

	Nivolumab (n = 163)	Docetaxel (n = 153)
Median OS, mo	**9.7**	**7.8**
(95% CI)	(7.6–13.3)	(6.7–10.5)
HR (95% CI)	**0.76 (0.61–0.96)**	



Hazard ratios were not reported for subg ... with < 5 patients per treatment group. [a]Not reported in 2 and 1 patient(s) with nivolumab and docetaxel, respectively.

OS in patients who achieved CR or PR



Lancet Oncology 2019

5-Year Survival Update From KEYNOTE-010: Pembrolizumab Versus Docetaxel in Previously Treated, PD-L1–Positive Advanced NSCLC

R.S. Herbst,[1] E.B. Garon,[2] D.W. Kim,[3] B. C. Cho,[4] R. Gervais,[5] J.L. Perez-Gracia,[6] J.-Y. Han,[7] M. Majem,[8] M.D. Forster,[9] I. Monnet,[10] S. Novello,[11] M.A. Gubens,[12] M. Boyer,[13] W.-C. Su,[14] A. Samkari,[15] E.H. Jensen,[15] B. Piperdi,[15] P. Baas[16]

[1]Department of Medical Oncology, Yale University School of Medicine, Yale Comprehensive Cancer Center, New Haven, CT, USA; [2]David Geffen School of Medicine at the University of California, Los Angeles, Los Angeles, CA, USA; [3]Seoul National University Hospital, Seoul, South Korea; [4]Yonsei Cancer Center, Yonsei University College of Medicine, Seoul, South Korea; [5]Centre François Baclesse, Caen, France; [6]Clinica Universidad de Navarra, Pamplona, Spain; [7]National Cancer Center, Korea, Goyang-si, South Korea; [8]Hospital de la Santa Creu i Sant Pau, Barcelona, Spain; [9]UCL Cancer Institute/University College London Hospitals, London, UK; [10]Centre Hospitalier Intercommunal de Créteil, Créteil, France; [11]University of Turin, Azienda Ospedaliero-Universitaria San Luigi Gonzaga, Orbassano, Italy; [12]University of California, San Francisco, San Francisco, CA, USA; [13]Chris O'Brien Lifehouse, Camperdown, NSW, Australia; [14]National Cheng Kung University Hospital, Tainan, Taiwan; [15]Merck & Co., Inc., Kenilworth, NJ, USA; [16]The Netherlands Cancer Institute, Amsterdam, Netherlands

KEYNOTE-010 Study Design

Key Eligibility Criteria[1]

- Advanced NSCLC
- Confirmed PD after ≥1 line of chemotherapy[a]
- No active brain metastases
- ECOG PS 0–1
- PD-L1 TPS ≥1%
- No active/history of autoimmune disease requiring systemic therapy
- No ILD or pneumonitis requiring systemic steroids

R (1:1:1)[b]
N = 1034

- Pembrolizumab 10 mg/kg[d] IV Q3W for 35 cycles (2 years)[c]
- Pembrolizumab 2 mg/kg[d] IV Q3W for 35 cycles (2 years)[c]
- Docetaxel 75 mg/m^2 Q3W per local guidelines

Second-Course Pembrolizumab[d]

Pembrolizumab 200 mg Q3W 17 cycles (1 year)

Crossover Pembrolizumab[e]

PD → Pembrolizumab 200 mg Q3W (2 years)

Dual primary efficacy endpoints: OS and PFS (RECIST version 1.1, independent central review)

Secondary endpoints: Included ORR and DOR

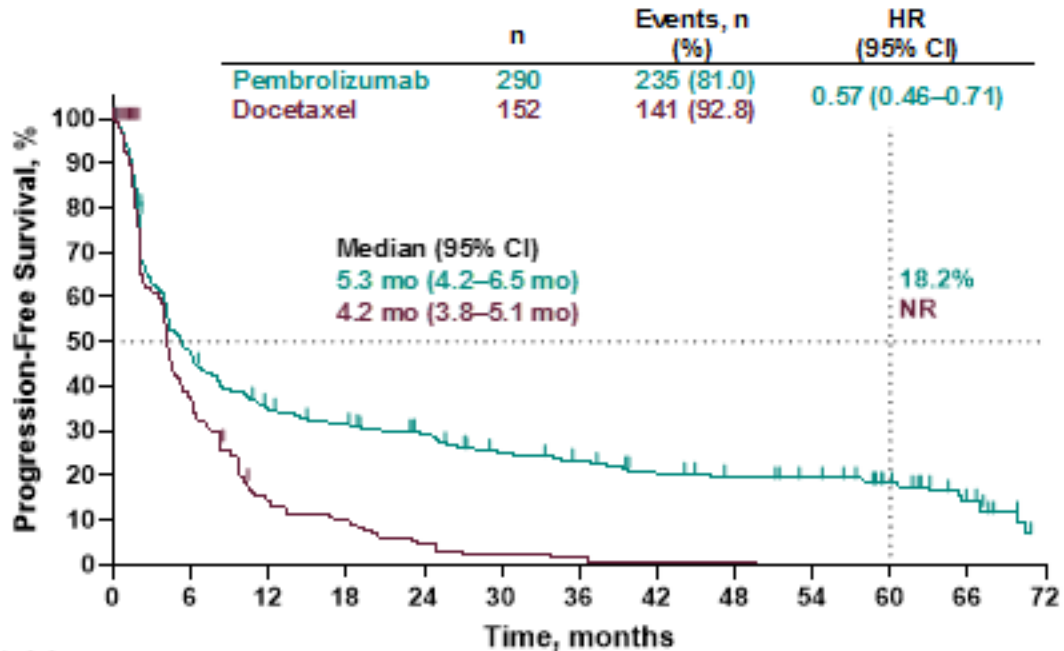
ILD; interstitial lung disease; R, randomization.

[a]Included ≥2 cycles of platinum-doublet chemotherapy. An appropriate tyrosine kinase inhibitor was required for patients with *EGFR*/*ALK* alterations. [b]Randomization was stratified by ECOG PS (0 vs 1), region (East Asia vs non–East Asia), and PD-L1 status (TPS ≥50% vs 1%–49%). [c]Because no differences in OS were observed between the 2 mg/kg and 10 mg/kg pembrolizumab dose groups in the primary analysis,[1] pembrolizumab doses were pooled for this analysis. [d]Patients randomized to pembrolizumab who completed 35 cycles (~2 years) of pembrolizumab or who stopped pembrolizumab after achieving CR and receiving ≥6 months of treatment, but then had PD, were eligible for second-course pembrolizumab if they had received no other anticancer therapy since the last dose of pembrolizumab. [e]After the primary analysis, crossover from docetaxel to pembrolizumab was allowed for patients with PD.

1. Herbst R, et al. *Lancet*. 2016;387:1540-1550.

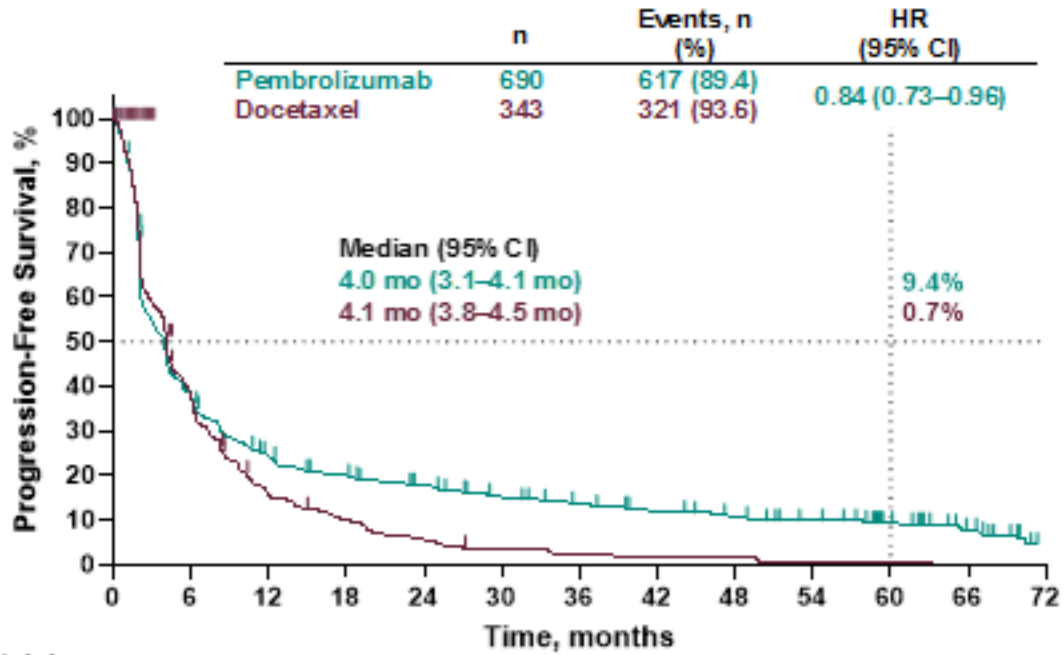
Progression-Free Survival[a]

PD-L1 TPS ≥50%



No. at risk													
Pembrolizumab	290	137	97	85	74	59	54	44	40	36	24	13	2
Docetaxel	152	54	19	13	6	3	2	1	1	0	0	0	0

PD-L1 TPS ≥1%

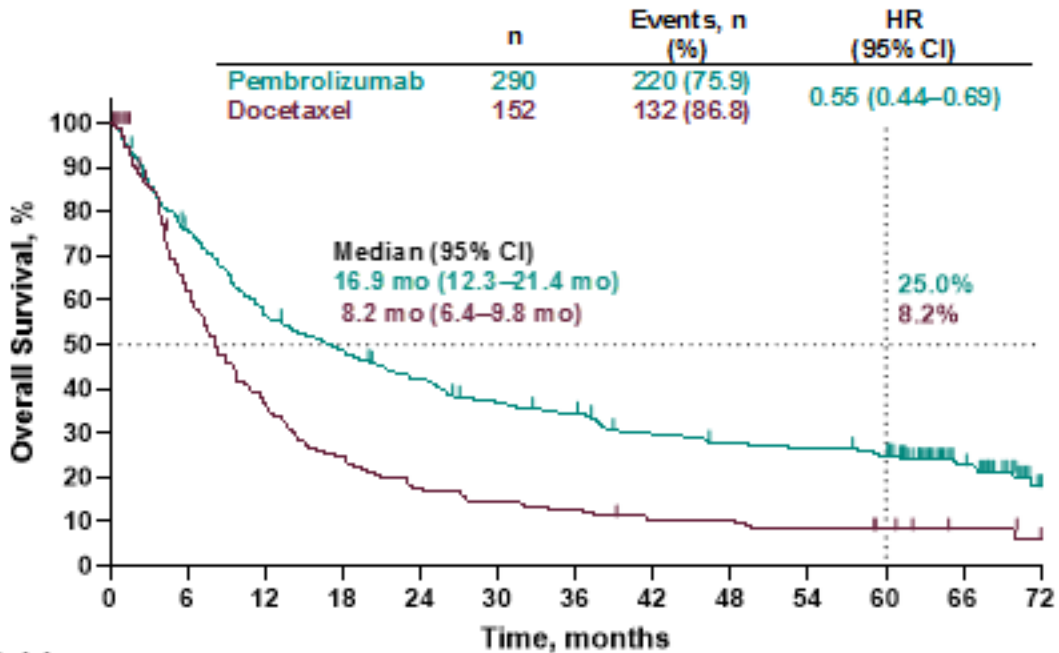


No. at risk													
Pembrolizumab	690	264	163	130	109	89	78	64	55	46	32	19	3
Docetaxel	343	125	48	31	16	10	7	5	4	2	2	0	0

CI, confidence interval; HR, hazard ratio; NR, not reached
[a]Per RECIST v1.1. by independent central review
Data cutoff: April 8, 2020

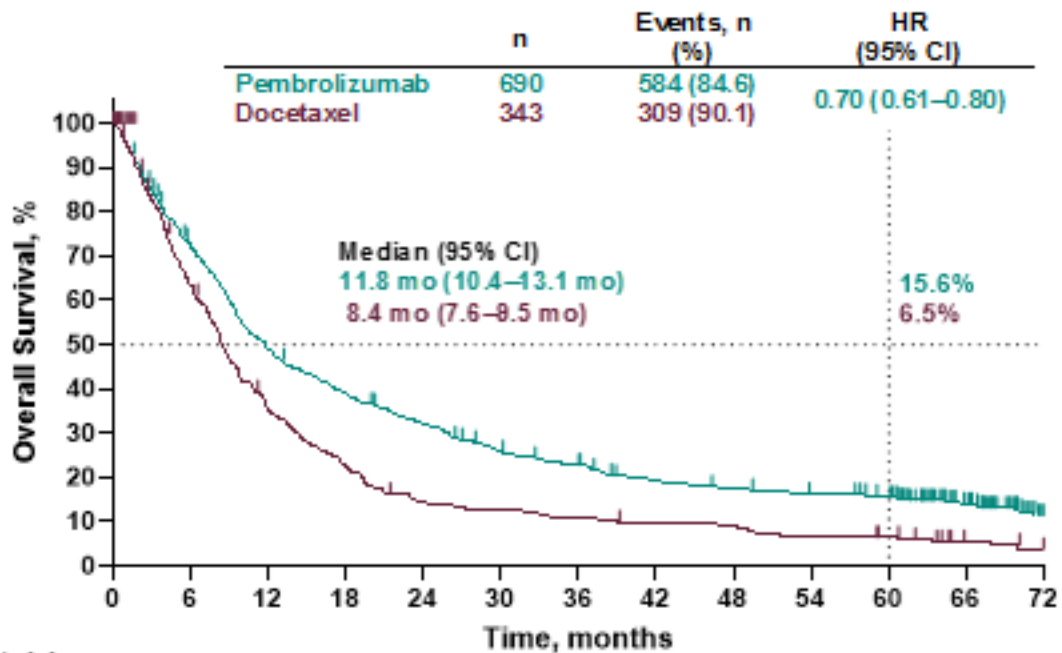
Overall Survival

PD-L1 TPS ≥50%



No. at risk													
Pembrolizumab	290	217	162	139	118	101	93	78	72	69	63	33	5
Docetaxel	152	88	52	35	25	21	18	14	14	11	9	5	2

PD-L1 TPS ≥1%



No. at risk													
Pembrolizumab	690	494	333	267	217	171	148	121	110	101	90	51	11
Docetaxel	343	208	114	73	46	40	35	29	27	20	18	7	3

CI, confidence interval; HR, hazard ratio
Data cutoff: April 8, 2020

ORR and DOR[a]

	PD-L1 TPS ≥50%		PD-L1 TPS ≥1%	
	Pembrolizumab N = 290	Docetaxel N = 152	Pembrolizumab N = 690	Docetaxel N = 343
Objective response rate, % (95% CI)	33.1 (27.7–38.8)	9.2 (5.1–15.0)	21.2 (18.2–24.4)	9.6 (6.7–13.2)
Time to response, median (range), mo	2.2 (1.9–16.4)	2.1 (1.2–51.8)	2.1 (1.1–51.8)	2.1 (1.3–18.9)
DOR, median (range), mo[b]	68.4 (2.0+ to 71.7+)	8.5 (2.6 to 16.8)	68.4 (2.0+ to 71.7+)	7.5 (1.4+ to 16.8)
Patients with ongoing response, n (%)[c]	41 (43.0)	0	51 (35)	0

[a]Per RECIST v1.1. by independent central review
[b]"+" symbol indicates there is no progressive disease by the time of last disease assessment
[c]Includes all patients with a response who are alive, progression free, have not initiated new anticancer therapy, and have not been lost to follow-up
Data cutoff: April 8, 2020

ORR[a] and OS

Patients Who Completed 35 Cycles/2 Years of Pembrolizumab

	N = 79
Objective response, n (%)	78 (98.7)
Best overall response, n (%)	
Complete response	15 (19.0)
Partial response	63 (79.7)
Stable disease	1 (1.3)

- 3-year OS rate from completion of 35 cycles/2 years pembrolizumab (ie, ~5 years from randomization) was 83.0%
- At data cutoff, 61/79 patients (77.2%) were alive, 38 of whom were alive without PD

[a]Per RECIST v1.1. by independent central review
Data cutoff: April 8, 2020

Treatment Duration and Time to Response
Second-Course Pembrolizumab[a]

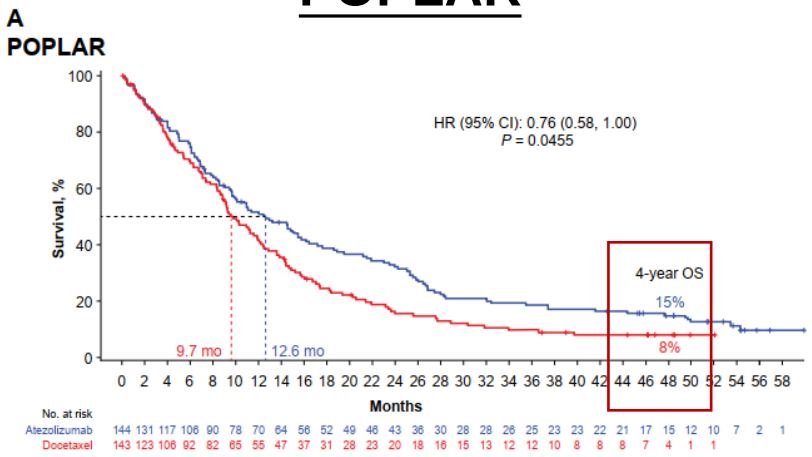
Second-Course Response	N = 21
Objective response[b], n (%)	11 (52.4)
Best objective response[b], n (%)	
Complete response	1 (4.8)
Partial response	10 (47.6)
Stable disease	6 (28.6)
Progressive disease[c]	3 (14.3)
No assessment	1 (4.8)

At data cutoff, 15/21 patients (71.4%) were alive

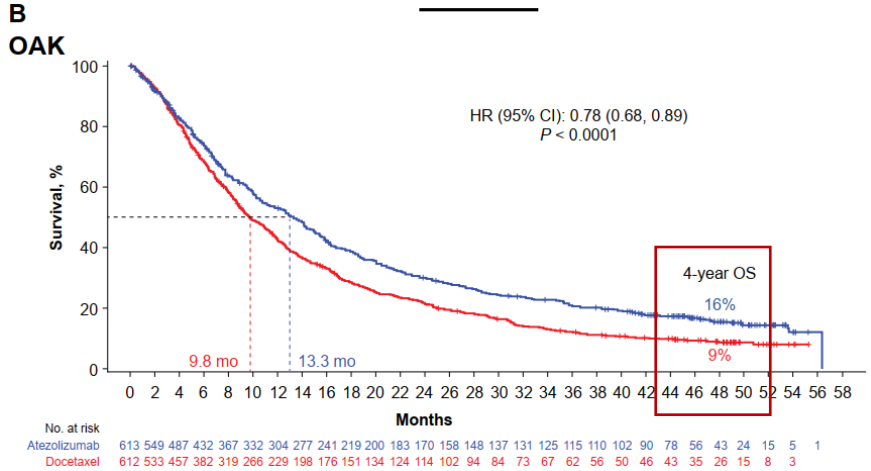
Bar lengths indicate duration of second-course treatment (dark green) and months of second-course follow-up (light green bar following dark green bar). Follow-up was defined as the last known nonprogression scan or date of last investigator assessment the patient was alive. [a]One patient received a second course of pembrolizumab but did not meet eligibility criteria for having completed 35 cycles or 2 years of first-course pembrolizumab. [b]Response was assessed during second-course treatment by RECIST v1.1 by independent central review, PD is per immune-related response criteria (irRC) by investigator review. [c]Eight patients with PR/SD after starting second-course subsequently had PD per immune-related response criteria (irRC) by investigator review. Data cutoff: April 8, 2020

Long-term OS Rate in previously treated NSCLC pts

POPLAR

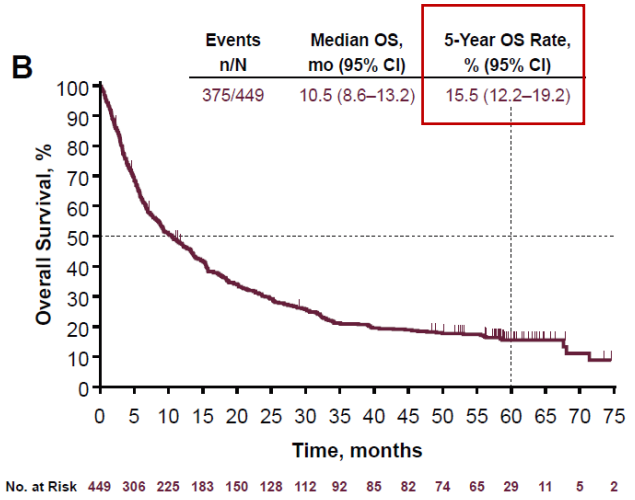


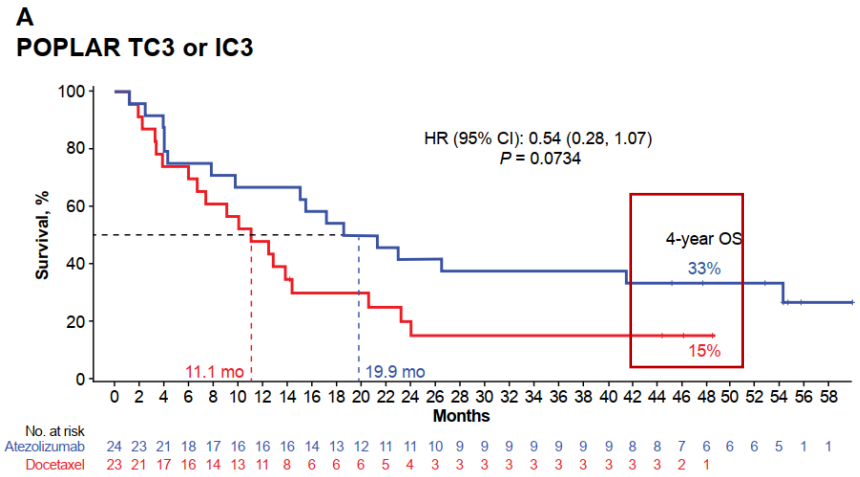
OAK

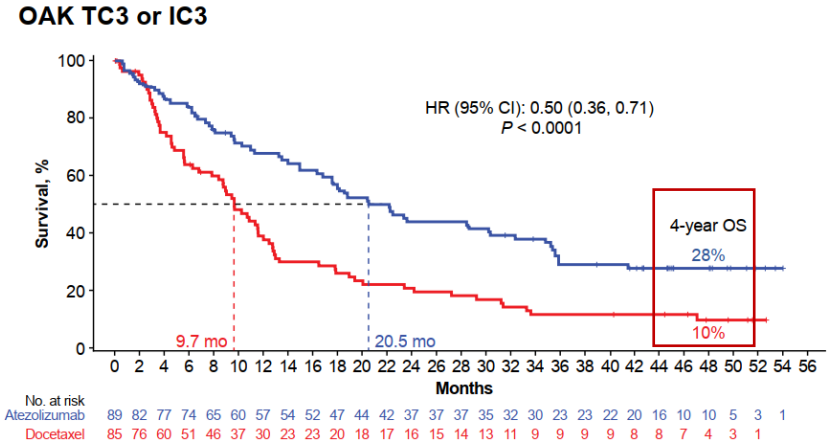


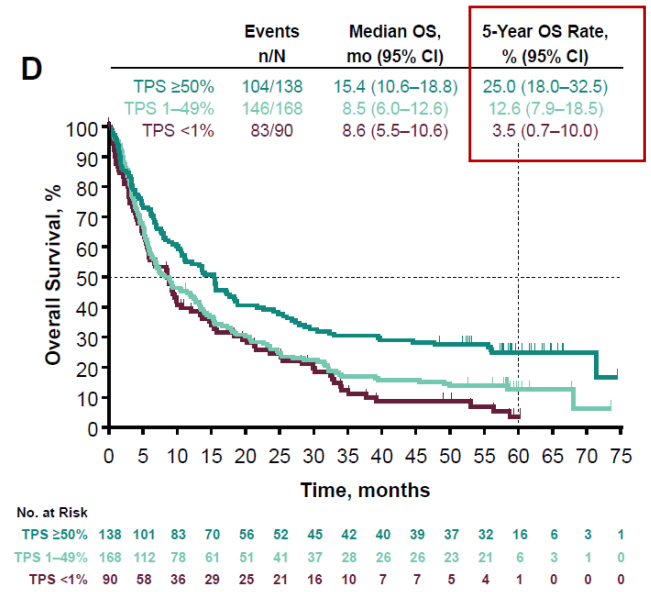
KN-001

Previously Treated Patients









Stephen V. Liu and et. al., 2020 ESMO;
Edward B. Garon,and et. Al., 2019 ASCO

Long-term OS for previously treated patients with IO monotherapy: Regardless of PD-L1 expression

Drug	Study	N	2-years	3-years	4-year	5 years
Tecentriq	NCT0137584[1]	89	37%	28%		N/A
Tecentriq	OAK[2]	613	31%	21%	16%	N/A
Tecentriq	POPLAR[2]	144	32%	19%	15%	N/A
pembrolizumab	Keynote-001[3]	449	30.1%	20.9%	18.2%	15.5%
Nivolumab	CA209-003[4]	129	25%	18%	17%	16%
Nivolumab	CM-017 & 057[5]	427	26.9%	17.1%	14.2%	13.4%

1. Leora Horn, European Journal of Cancer, 101, 201-209, 2018
2. Julien Mazieres, et al. J Thorac Oncol 2020
3. Edward B. Garon and et. al, 2019 ASCO
4. Scott Gettinger, JCO, Volume 36 •Number 17 • June 10, 2018
5. Hossein Borghaei, et al. J Clin Oncol, 2021

Long-term OS for previously treated patients with IO monotherapy: PD-L1 ≥ 50%

Drug	Study	N	2-years	3-years	4-year	5 years
Tecentriq	OAK[1]	613	42%	29%	28%	N/A
Tecentriq	POPLAR[1]	144	41%	38%	33%	N/A
pembrolizumab	Keynote-010[2]	449	42%	34%	30%	25.0%
Nivolumab	CM-017 & 057[3]	427	31.7%	21.3%	19.5%	18.3%

1. Julien Mazieres, et al. J Thorac Oncol 2020
2. R. S. Herbst and et al, 2020 WCLC
3. Hossein Borghaei, et al. J Clin Oncol, 2021

Long-term OS for previously treated patients with IO monotherapy: PD-L1 ≥ 50%

Drug	Study	N	2-years	3-years	4-year	5 years
Tecentriq	OAK[1]	613	42%	29%	28%	N/A
Tecentriq	POPLAR[1]	144	41%	38%	33%	N/A
pembrolizumab	Keynote-010[2]	449	42%	34%	30%	25.0%
nivolumab	CM-017 & 057[3]	427	31.7%	21.3%	19.5%	18.3%

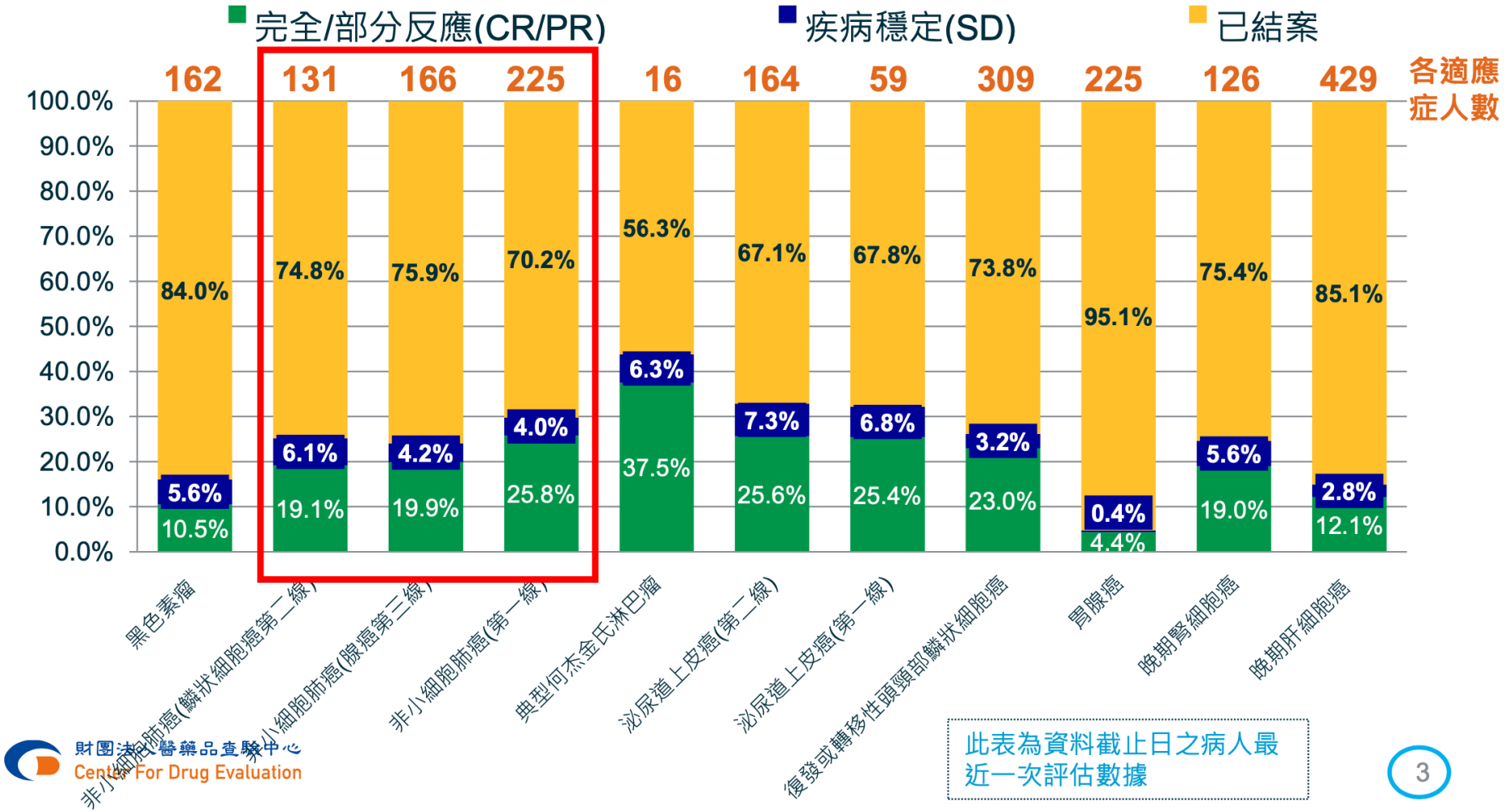
1. Julien Mazieres, et al. J Thorac Oncol 2020
2. R. S. Herbst and et al, 2020 WCLC
3. Hossein Borghaei, et al. J Clin Oncol, 2021

Conclusion

- CPI provided meaningful and durable benefit in OS and PFS as 2nd line or later treatment of NSCLC patients, especially PD-L1 high group
- 2nd Course of CPI provided disease control

各適應症最近一次評估疾病控制情形

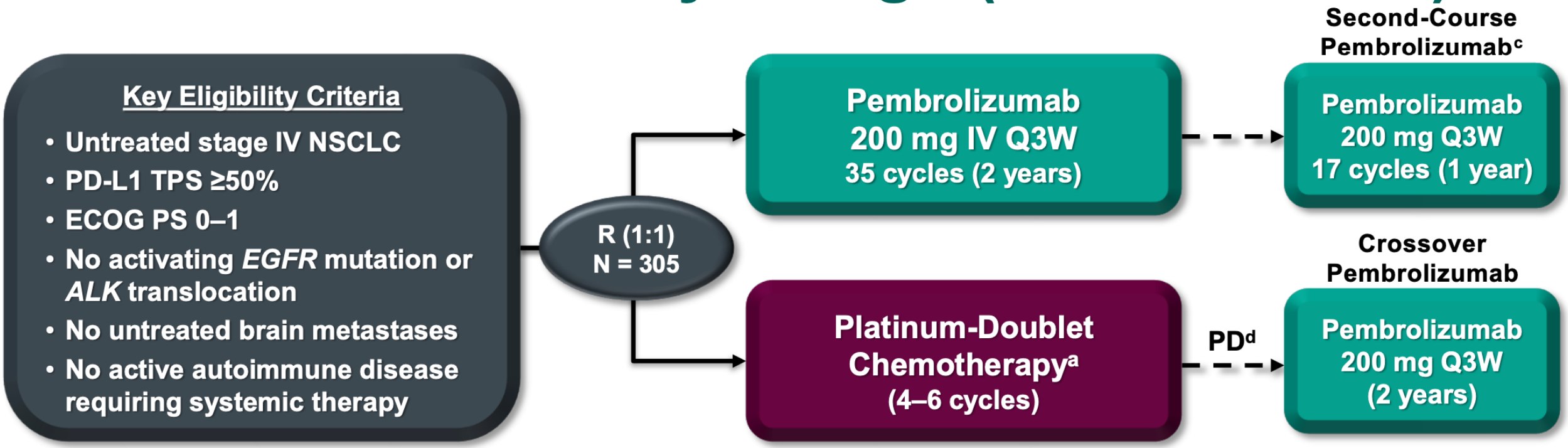
- 分析對象：核定可續用、已填報結案者，共2,012人
- 資料截斷日期：109/9/30



此表為資料截止日之病人最近一次評估數據

Immunotherapy Alone in First line

KEYNOTE-024 Study Design (NCT02142738)

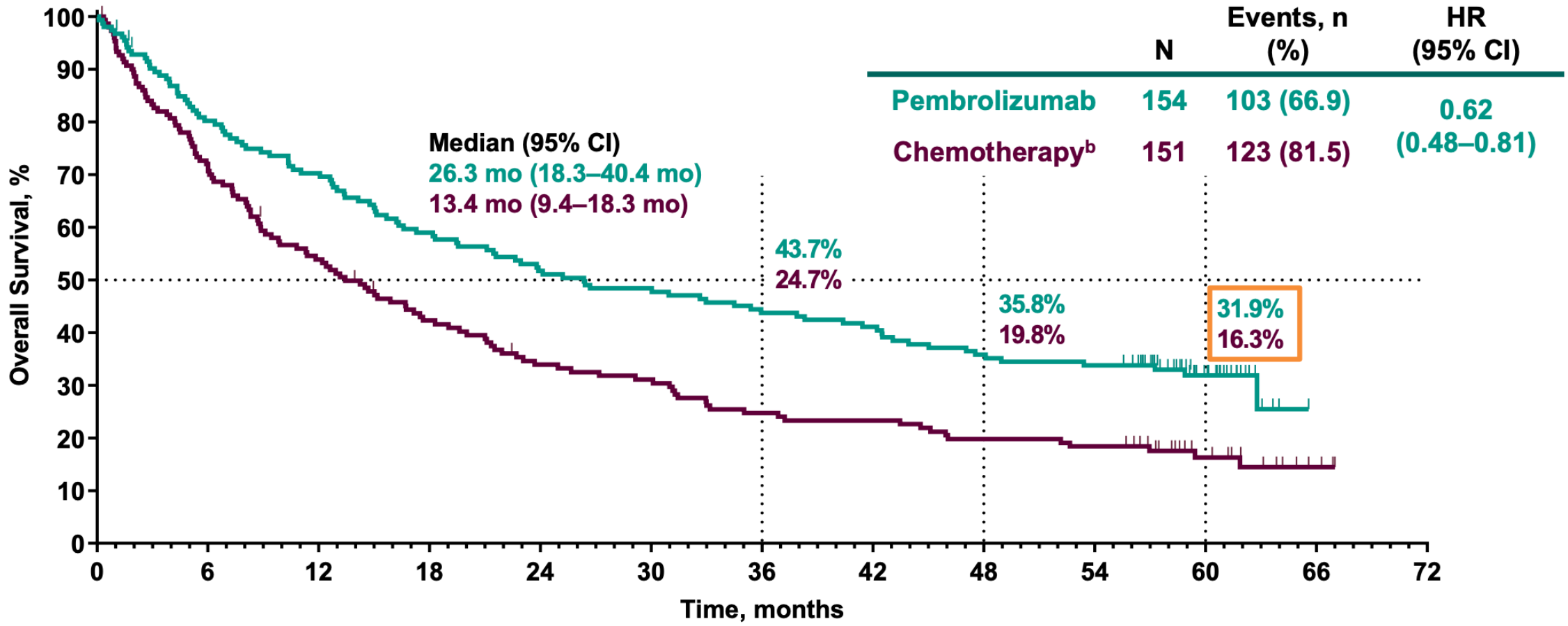


End Points

Primary:	PFS (RECIST v1.1 per blinded, independent, central review)
Key secondary:	OS
Secondary:	ORR, safety, PFS (RECIST v1.1 per investigator review)
Exploratory:	DOR

[a]Optional pemetrexed maintenance therapy for nonsquamous disease. [b]Permitted for nonsquamous disease only. [c]Patients randomized to pembrolizumab who completed 2 years of therapy or who stopped pembrolizumab after achieving CR and then had PD were eligible for a second course of pembrolizumab monotherapy. [d]Before the DMC recommendation and amendment 8, which permitted those in the chemotherapy arm to be offered pembrolizumab (based on interim analysis 2 data), patients were eligible for crossover when PD was confirmed by blinded, independent, central radiology review.

Overall Survival[a]



No. at risk													
Pembrolizumab	154	121	106	89	78	73	66	62	54	51	20	0	0
Chemotherapy	151	108	80	61	48	44	35	33	28	26	13	3	0

[a]ITT population.

[b]Effective crossover rate from chemotherapy to anti–PD-(L)1 therapy, 66.0% (99 patients in total crossed over to anti–PD-[L]1 therapy: 83 patients crossed over to pembrolizumab during the study, and 16 patients received subsequent anti–PD-[L]1 therapy outside of crossover; patients may have received >1 subsequent anti–PD-[L]1 therapy). Data cutoff: June 1, 2020.

Baseline Characteristics

Characteristic	Pembrolizumab N = 154	Chemotherapy N = 151	35 Cycles (2 Years) of Pembrolizumab N = 39[a]	Second Course of Pembrolizumab N = 12[b]
Age, y, median (range)	64.5 (33–90)	66.0 (38–85)	61.0 (43–80)	60.0 (43–77)
Male	92 (59.7)	95 (62.9)	25 (64.1)	8 (66.7)
ECOG PS 1	99 (64.3)	98 (64.9)	23 (59.0)	9 (75.0)
East Asian enrollment site	21 (13.6)	19 (12.6)	8 (20.5)	3 (25.0)
Squamous histology	29 (18.8)	27 (17.9)[c]	2 (5.1)	1 (8.3)
Current/former smoker	149 (96.8)	132 (87.4)	37 (94.9)	12 (100.0)
Treated brain metastases	18 (11.7)	10 (6.6)	9 (23.1)	1 (8.3)
Prior neoadjuvant therapy	3 (1.9)	1 (0.7)	0	0
Prior adjuvant therapy	6 (3.9)	3 (2.0)	0	0

[a]Includes only those patients initially allocated to pembrolizumab who received 35 cycles (2 years) of pembrolizumab according to actual exposure assessment. [b]Includes only those patients initially allocated to pembrolizumab who received a second course of pembrolizumab therapy according to actual exposure assessment. [c]Includes patients with squamous cell carcinoma and poorly differentiated squamous cell carcinoma. Data in table are n (%), unless otherwise noted. Data cutoff: June 1, 2020.

KEYNOTE-042 Study Design

Key Eligibility Criteria

- Untreated locally advanced or metastatic NSCLC of any histology
- PD-L1 TPS ≥1%[a]
- No sensitizing *EGFR* or *ALK* alterations
- ECOG PS 0 or 1
- No untreated or unstable central nervous system metastases
- No history of pneumonitis that required systemic corticosteroids

Stratification Factors

- Region (east Asia vs rest of the world)
- ECOG PS (0 vs 1)
- Histology (squamous vs nonsquamous)
- PD-L1 TPS (≥50% vs 1%–49%)

R 1:1

N = 637: Pembrolizumab 200 mg Q3W for up to 35 cycles[b] → Second-Course Pembrolizumab[b]: Pembrolizumab 200 mg Q3W 17 cycles (1 year)

N = 637: Carboplatin AUC 5 or 6 Q3W + Paclitaxel 200 mg/m^2 Q3W[c] OR Carboplatin AUC 5 or 6 Q3W + Pemetrexed 500 mg/m^2 Q3W[c] for up to 6 cycles

Endpoints

- Primary: OS in PD-L1 TPS ≥50%, ≥20%, and ≥1%
- Secondary: PFS and ORR in TPS ≥50%, ≥20%, and ≥1%; safety in TPS ≥1%
- Exploratory: DOR, PFS2[d]

AUC, area under the curve.DOR, duration of response.

[a]Assessed in formalin-fixed tumor samples using PD-L1 IHC 22C3 pharmDx assay (Agilent Technologies, Carpinteria, CA, USA), with expression measured using TPS (defined as the percentage of tumor cells with membranous PD-L1 staining). [b]Patients randomized to pembrolizumab who completed 35 treatment cycles with SD or better or stopped treatment after confirmed CR could receive second-course pembrolizumab after disease progression if eligibility criteria were met. [c]Pemetrexed maintenance therapy was optional but strongly encouraged for patients with nonsquamous histology. [d]PFS2 was defined as the time from randomization to subsequent disease progression after initiation of new anti-cancer treatment or death from any cause, whichever occurred first.

Baseline Characteristics: All Patients

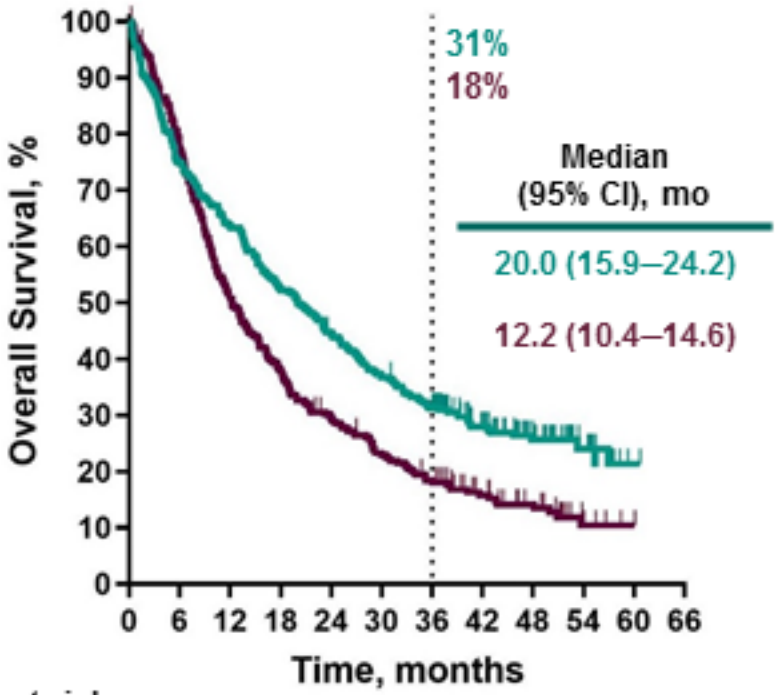
	Pembro (N = 637)	Chemo (N = 637)	Completed 35 Cycles (2 Years) of Pembro (N = 102)	Second-Course Pembro (N = 26)
Age, median (range), y	63.0 (25–89)	63.0 (31–90)	62.0 (33–81)	60.5 (49–75)
Men	450 (70.6)	452 (71.0)	73 (71.6)	17 (65.4)
Enrolled in east Asia	185 (29.0)	185 (29.0)	26 (25.5)	8 (30.8)
ECOG PS 1	439 (68.9)	445 (69.9)	50 (49.0)	12 (46.2)
Squamous histology	242 (38.0)	249 (39.1)	26 (25.5)	12 (46.2)
PD-L1 TPS[a]				
≥50%	299 (46.9)	300 (47.1)	66 (64.7)	17 (65.4)
20%–49%	114 (17.9)	105 (16.5)	14 (13.7)	4 (15.4)
1%–19%	224 (35.2)	232 (36.4)	22 (21.6)	5 (19.2)
Current/former smoker	495 (77.7)	497 (78.0)	83 (81.3)	19 (73.1)
Prior therapy				
Neoadjuvant	3 (0.5)	7 (1.1)	0	0
Adjuvant	18 (2.8)	12 (1.9)	3 (2.9)	0
Radiotherapy	74 (11.6)	81 (12.7)	17 (16.7)	3 (11.5)

Chemo, chemotherapy; Pembro, pembrolizumab. Data in table are n (%) unless otherwise noted. Arrows indicate stratification factors.
[a]Proportion of randomized population.
Data cutoff date: February 21, 2020.

OS

PD-L1 TPS ≥50%

	Events, n (%)	HR (95% CI)
Pembrolizumab	219 (73)	0.68 (0.57–0.82)
Chemotherapy	255 (85)	

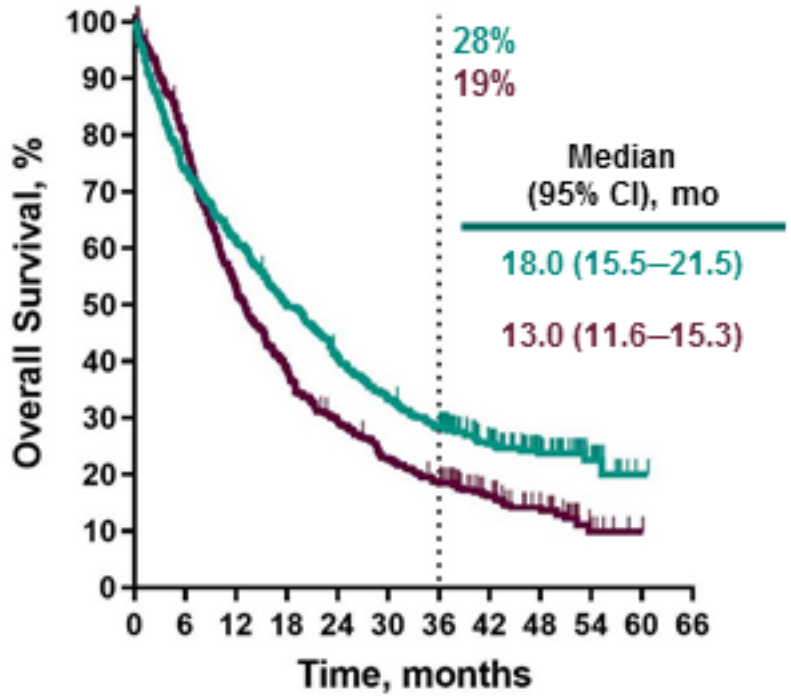


No. at risk

Pembro	299	190	132	89	35	1	0
Chemo	300	151	87	52	21	0	0

PD-L1 TPS ≥20%

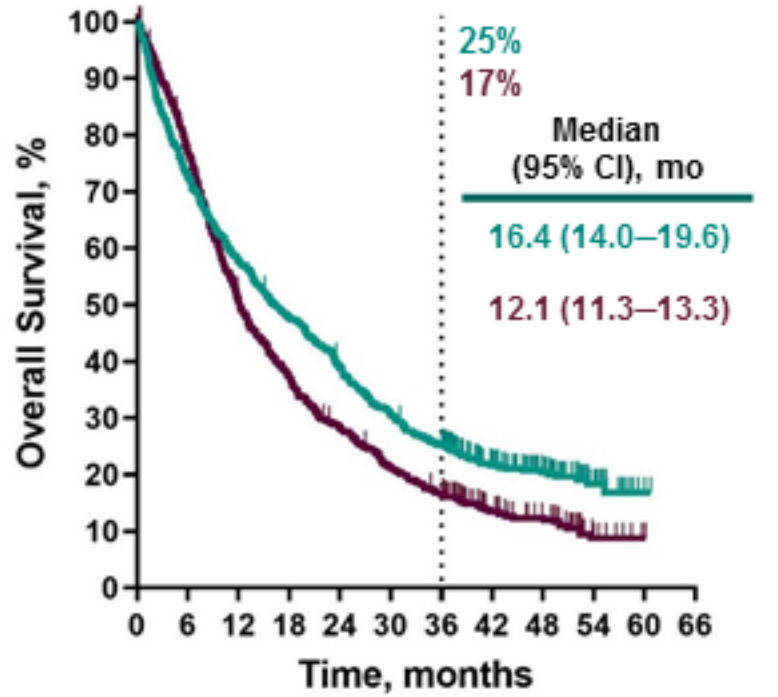
	Events, n (%)	HR (95% CI)
Pembrolizumab	311 (75)	0.75 (0.64–0.88)
Chemotherapy	341 (84)	



	413	253	166	112	45	1	0
	405	212	117	70	25	0	0

PD-L1 TPS ≥1%

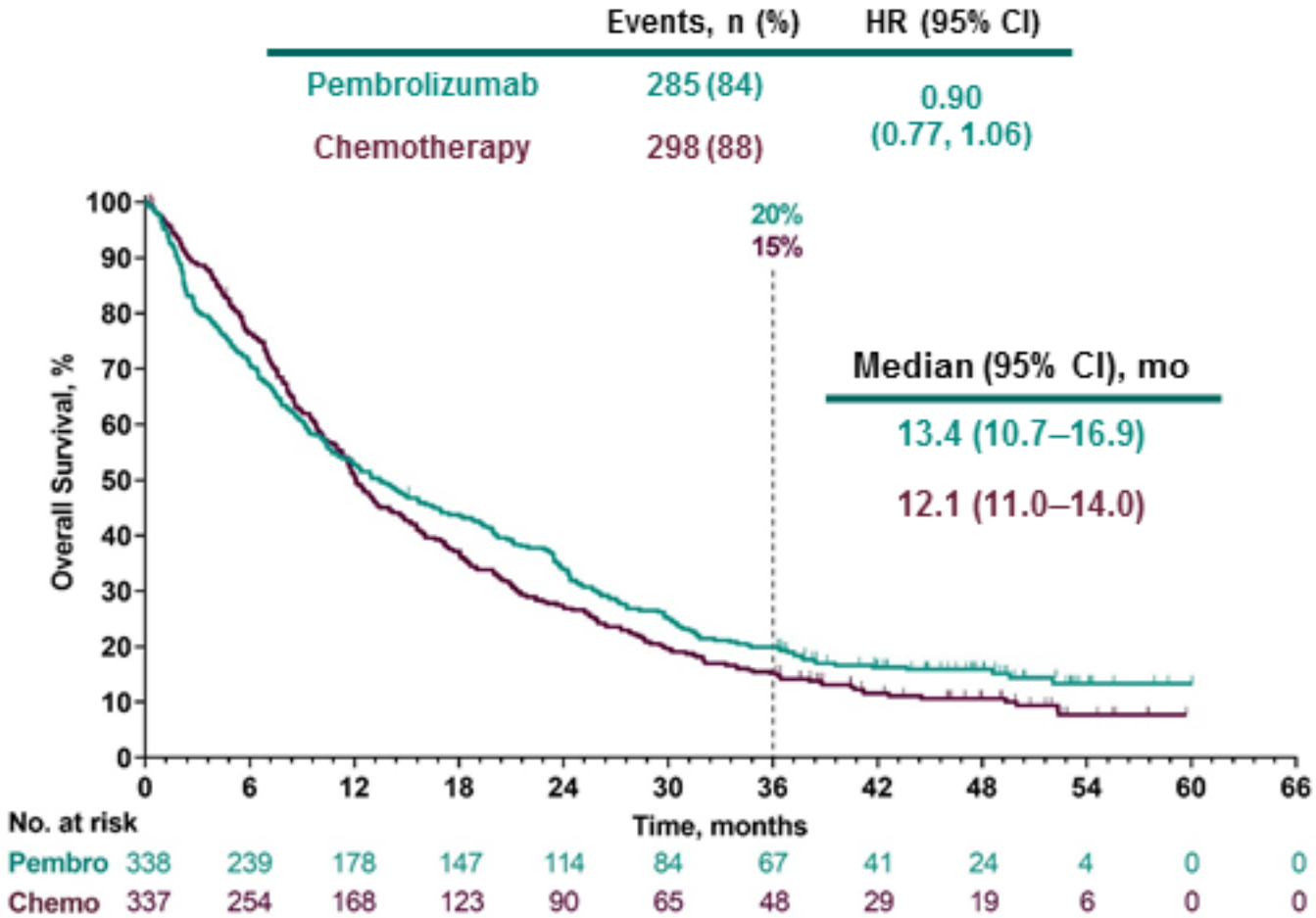
	Events, n (%)	HR (95% CI)
Pembrolizumab	504 (79)	0.80 (0.71–0.90)
Chemotherapy	553 (87)	



	637	368	246	156	59	1	0
	637	319	177	100	40	0	0

HR, hazard ratio.
Data cutoff date: February 21, 2020.

OS and ORR in Patients with PD-L1 TPS 1–49%



	Pembro (N = 338)	Chemo (N = 337)
ORR,[a] % (95% CI)	16.9 (13.0–21.3)	21.7 (17.4–26.4)
DOR,[a,b] median (range), mo	47.4 (9.1 to 54.0+)	28.2 (13.7 to 29.2+)

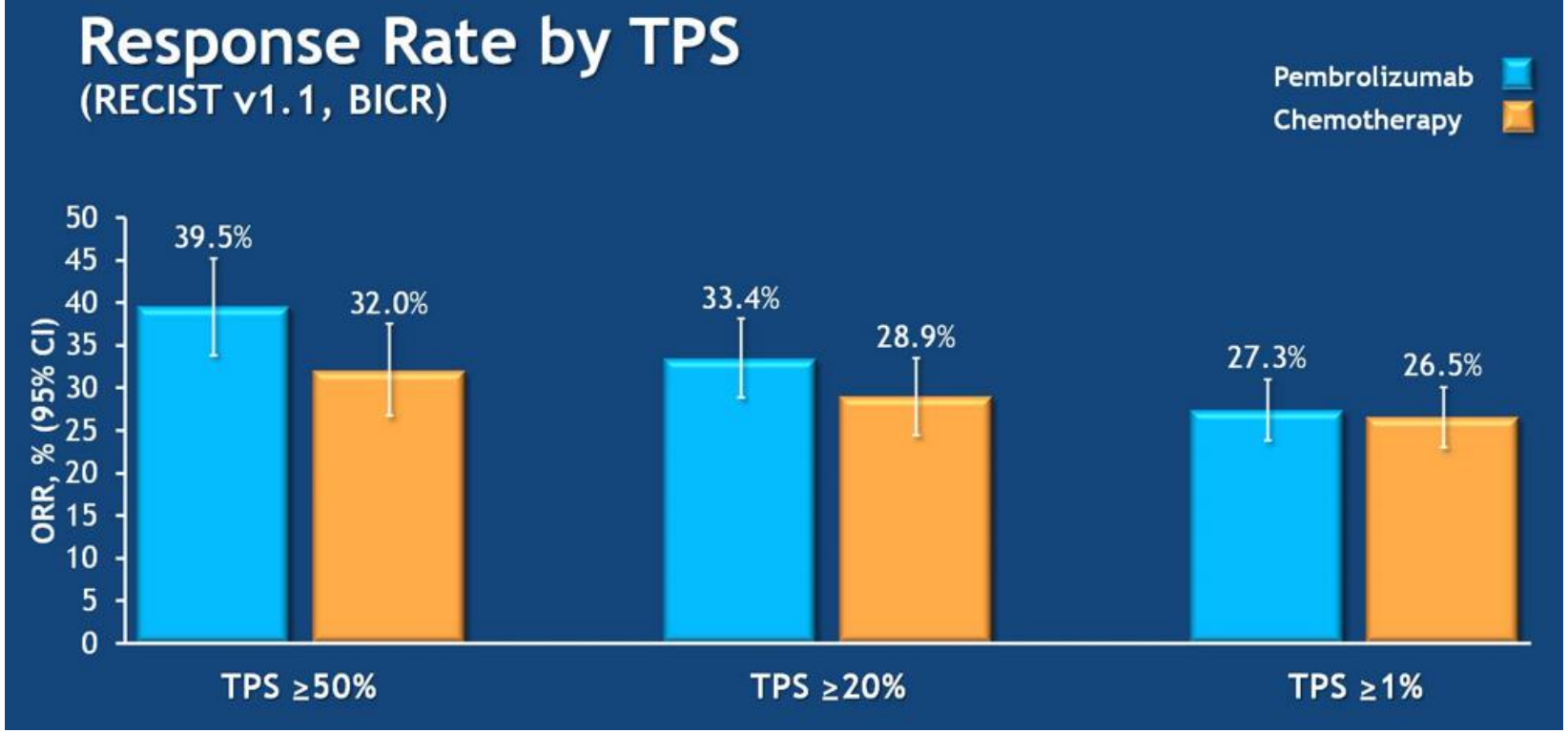
[a]Based on blinded independent central review per RECIST version 1.1 with confirmation. [b]+ indicates there is no progressive disease by the time of last disease assessment.
Data cutoff date: February 21, 2020.

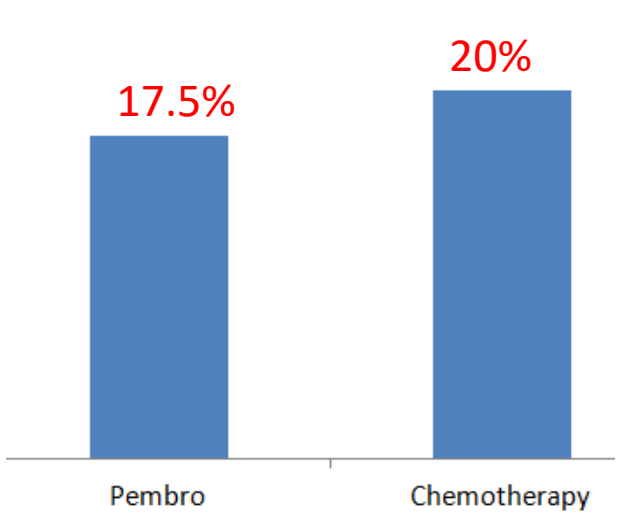
PFS, PFS2, and ORR

	TPS ≥50%		TPS ≥20%		TPS ≥1%	
	Pembro (N = 299)	Chemo (N = 300)	Pembro (N = 413)	Chemo (N = 405)	Pembro (N = 637)	Chemo (N = 637)
PFS,[a,b,c] median (95% CI), mo	6.5 (5.9–8.6)	6.5 (6.2–7.6)	6.2 (5.1–7.4)	6.8 (6.3–8.1)	5.5 (4.3–6.2)	6.8 (6.4–7.7)
HR (95% CI)	0.85 (0.72–1.02)		0.95 (0.82–1.10)		1.05 (0.93–1.18)	
PFS,[a] 3-y rate (95% CI), %	14.5 (10.5–19.0)	5.3 (3.0–8.7)	13.2 (10.0–16.9)	4.7 (2.7–7.5)	11.0 (8.6–13.7)	4.1 (2.6–6.2)
PFS2,[a,b] median (95% CI), mo	**15.0 (11.6–19.2)**	**10.1 (8.9–11.2)**	**12.9 (10.9–15.5)**	**10.2 (9.0–11.3)**	**11.3 (10.1–12.9)**	**9.3 (8.6–10.2)**
HR (95% CI)	**0.62 (0.52–0.74)**		**0.66 (0.57–0.77)**		**0.73 (0.65–0.82)**	
ORR,[c] % (95% CI)	39.1 (33.6–44.9)	32.3 (27.1–37.9)	33.2 (28.6–37.9)	29.1 (24.8–33.8)	27.3 (23.9–31.0)	26.7 (23.3–30.3)
DOR,[a,c,d] median (range), mo	27.3 (2.1+ to 56.0+)	10.8 (1.8+ to 49.6+)	22.3 (2.1+ to 56.0+)	10.8 (1.8+ to 49.6+)	22.3 (2.1+ to 56.0+)	8.4 (1.8+ to 49.6+)

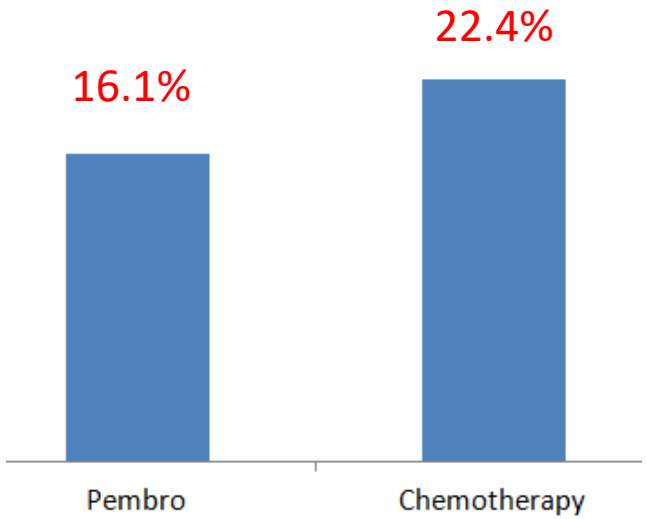
- PFS2 was defined as the time from randomization to subsequent disease progression after initiation of new anti-cancer treatment or death from any cause, whichever occurred first per investigator assessment by RECIST version 1.1

[a]Kaplan-Meier estimate. [b]PFS and PFS2 were calculated from the time of randomization. [c]Based on blinded independent central review per RECIST version 1.1 with confirmation. [d]+ indicates there is no progressive disease by the time of last disease assessment.
Data cutoff date: February 21, 2020.





TPS 20-50%



TPS 1- 20%

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CONQUERING THORACIC CANCERS WORLDWIDE

EMPOWER-Lung 1: Clinical benefits of first-line (1L) cemiplimab monotherapy by PD-L1 expression levels in patients with advanced NSCLC

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EMPOWER-Lung 1 Study Design

Key Eligibility Criteria
- Treatment-naïve advanced NSCLC
- PD-L1 ≥50%
- No *EGFR*, *ALK*, or *ROS1* mutations
- ECOG PS 0 or 1
- Treated, clinically stable CNS metastases and controlled hepatitis B or C or HIV were allowed

Stratification Factors:
- Histology (squamous vs non-squamous)
- Region (Europe, Asia, or ROW)

R 1:1

Arm A
Cemiplimab monotherapy IV
350 mg Q3W
Treat until PD or 108 weeks

PD → **Optional continuation of cemiplimab + 4 cycles of chemotherapy**

Arm B
4–6 cycles of investigator's choice chemotherapy

PD → **Optional crossover to cemiplimab monotherapy**

Follow-up

N=710

Endpoints:
- Primary: OS and PFS
- Secondary: ORR (key), DOR, HRQoL, and safety

ALK, anaplastic lymphoma kinase; CNS, central nervous system; DOR, duration of response; ECOG PS, Eastern Cooperative Oncology Group performance status; EGFR, epidermal growth factor receptor; HIV, human immunodeficiency virus; HRQoL, health-related quality of life; IV, intravenous; NSCLC, non-small cell lung cancer; ORR, objective response rate; OS, overall survival; PD, progressive disease; PD-L1, programmed cell death-ligand 1; PFS, progression-free survival; Q3W, every 3 weeks; R, randomized; ROS1, c-ros oncogene 1; ROW, rest of the world.

Baseline Characteristics were Similar Between the N=475 and N=563 Populations

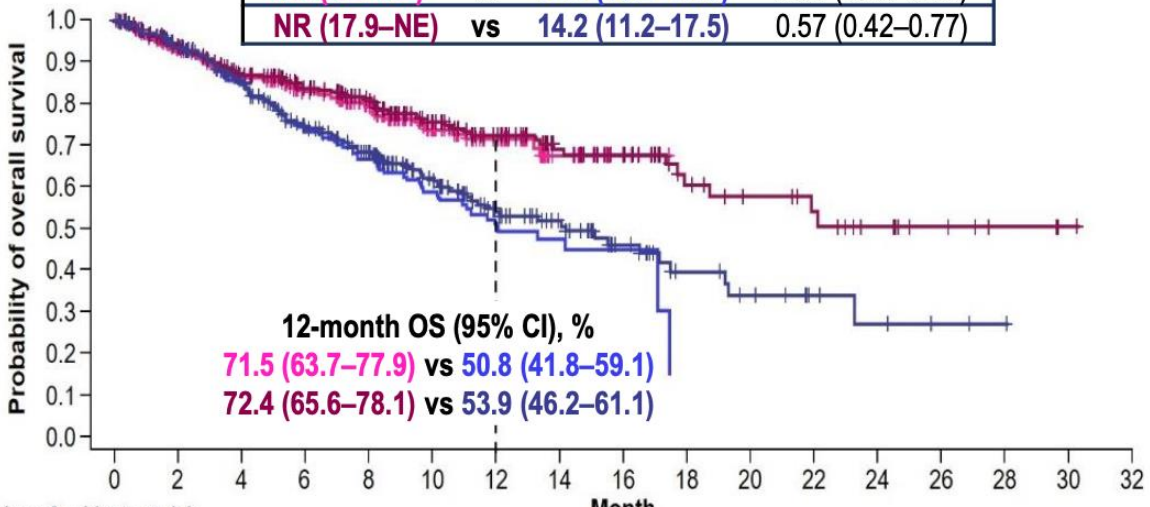
	Patients with PD-L1 testing according to instructions for use at entry (N=475)		PD-L1 ≥50% population (N=563)[1]	
n (%), unless stated	Cemiplimab (n=238)	Chemotherapy (n=237)	Cemiplimab (n=283)	Chemotherapy (n=280)
Median age (range), years	64.0 (31.0–79.0)	64.0 (40.0–84.0)	63.0 (31.0–79.0)	64.0 (40.0–84.0)
≥65 years	108 (45.4)	118 (49.8)	126 (44.5)	133 (47.5)
Male	207 (87.0)	194 (81.9)	248 (87.6)	231 (82.5)
Region of enrollment				
Europe	175 (73.5)	178 (75.1)	215 (76.0)	216 (77.1)
Asia	29 (12.2)	26 (11.0)	31 (11.0)	29 (10.4)
Rest of the world	34 (14.3)	33 (13.9)	37 (13.1)	35 (12.5)
ECOG PS 0;1	65 (27.3); 173 (72.7)	61 (25.7); 176 (74.3)	77 (27.2); 206 (72.8)	75 (26.8); 205 (73.2)
Histology				
Squamous	100 (42.0)	98 (41.4)	122 (43.1)	121 (43.2)
Non-squamous	138 (58.0)	139 (58.6)	161 (56.9)	159 (56.8)
Brain metastases	28 (11.8)	33 (13.9)	34 (12.0)	34 (12.1)
Cancer stage at screening				
Locally advanced	32 (13.4)	33 (13.9)	45 (15.9)	42 (15.0)
Metastatic	206 (86.6)	204 (86.1)	238 (84.1)	238 (85.0)
PD-L1 expression tertile				
≥90%	80 (33.6)	81 (34.2)	98 (34.6)	94 (33.6)
>60 to <90%	76 (31.9)	72 (30.4)	89 (31.4)	90 (32.1)
≥50 to ≤60%	82 (34.5)	84 (35.4)	96 (33.9)	96 (34.3)

ECOG PS, Eastern Cooperative Oncology Group performance status; PD-L1, programmed cell death-ligand 1. 1. Sezer A et al. Presented at ESMO 2020. LBA52.

Primary Outcomes were Similar Between the N=475 and N=563 Populations

OS

Median, months (95% CI)			HR (95% CI)
NR (NE–NE)	vs	12.1 (10.2–17.5)	0.57 (0.40–0.80)
NR (17.9–NE)	vs	14.2 (11.2–17.5)	0.57 (0.42–0.77)

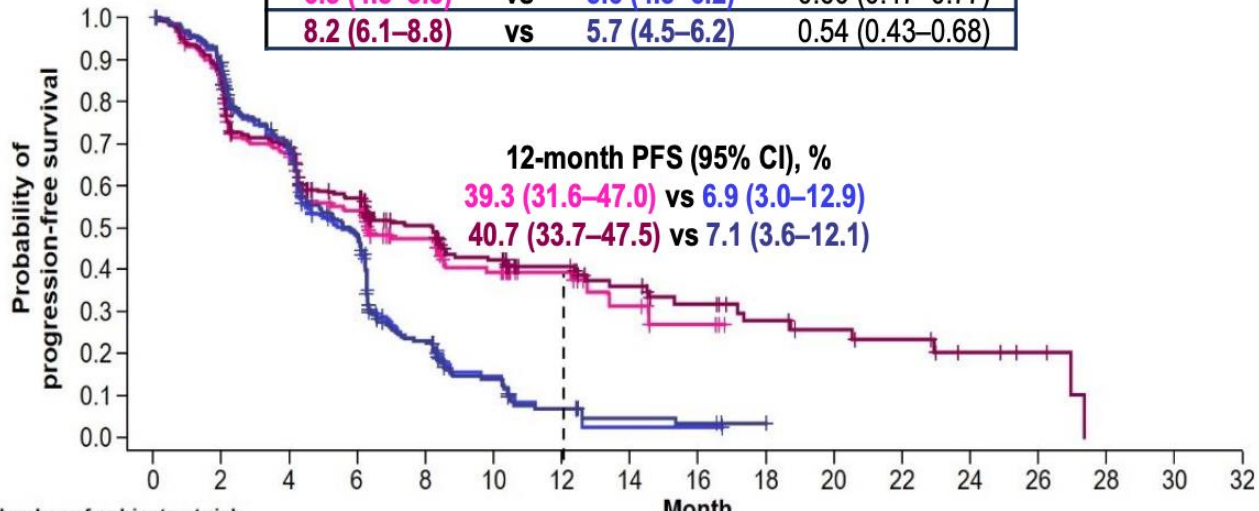


Number of subjects at risk

Cemiplimab	238	200	165	141	120	76	53	26	14	0	0	0	0	0	0	0	0
Chemotherapy	237	200	163	123	98	62	36	20	8	0	0	0	0	0	0	0	0
Cemiplimab	283	244	203	177	154	108	83	55	42	24	18	15	10	6	3	1	0
Chemotherapy	280	239	198	153	125	87	57	41	25	15	11	6	4	2	1	0	0

PFS

Median, months (95% CI)			HR (95% CI)
6.3 (4.5–8.5)	vs	5.6 (4.3–6.2)	0.60 (0.47–0.77)
8.2 (6.1–8.8)	vs	5.7 (4.5–6.2)	0.54 (0.43–0.68)



Number of subjects at risk

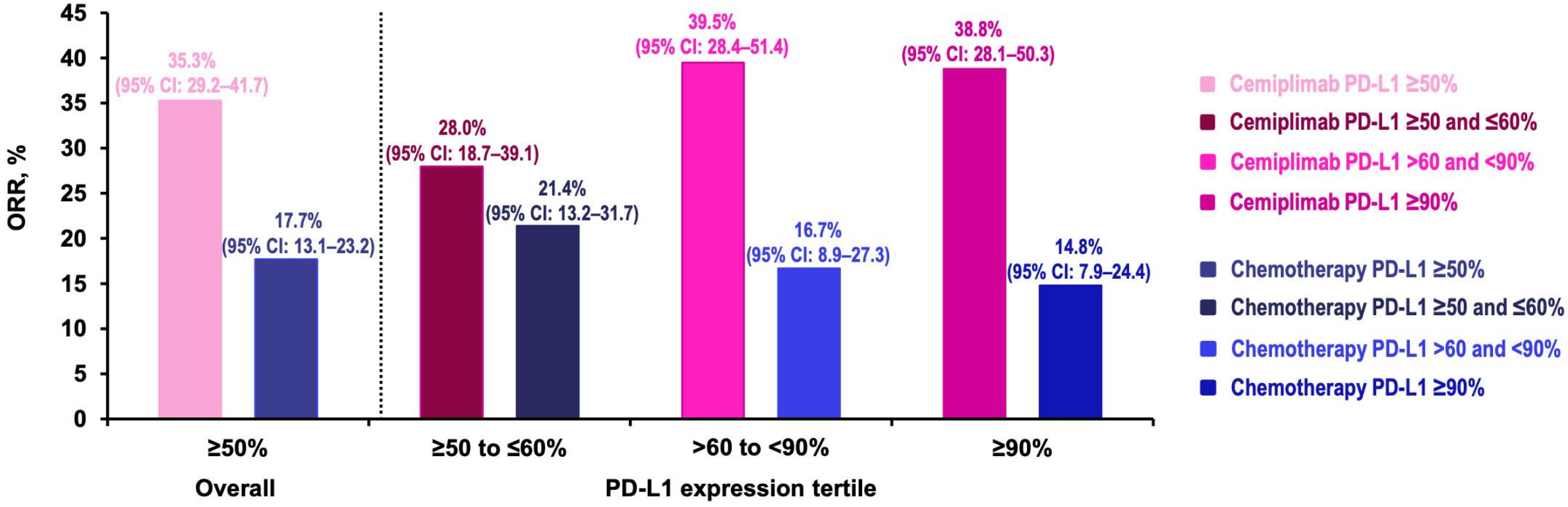
Cemiplimab	238	181	130	93	67	38	24	10	4	0	0	0	0	0	0	0	0
Chemotherapy	237	183	128	84	33	15	5	1	1	0	0	0	0	0	0	0	0
Cemiplimab	283	221	162	123	92	59	43	28	20	14	11	9	5	3	0	0	0
Chemotherapy	280	220	157	104	42	20	8	4	3	0	0	0	0	0	0	0	0

Cemiplimab (N=475)
Cemiplimab (N=563)
Chemotherapy (N=475)
Chemotherapy (N=563)

CI, confidence interval; HR, hazard ratio; NE, not evaluable; NR, not reached; OS, overall survival; PFS, progression-free survival.

Data cut-off date: March 1, 2020

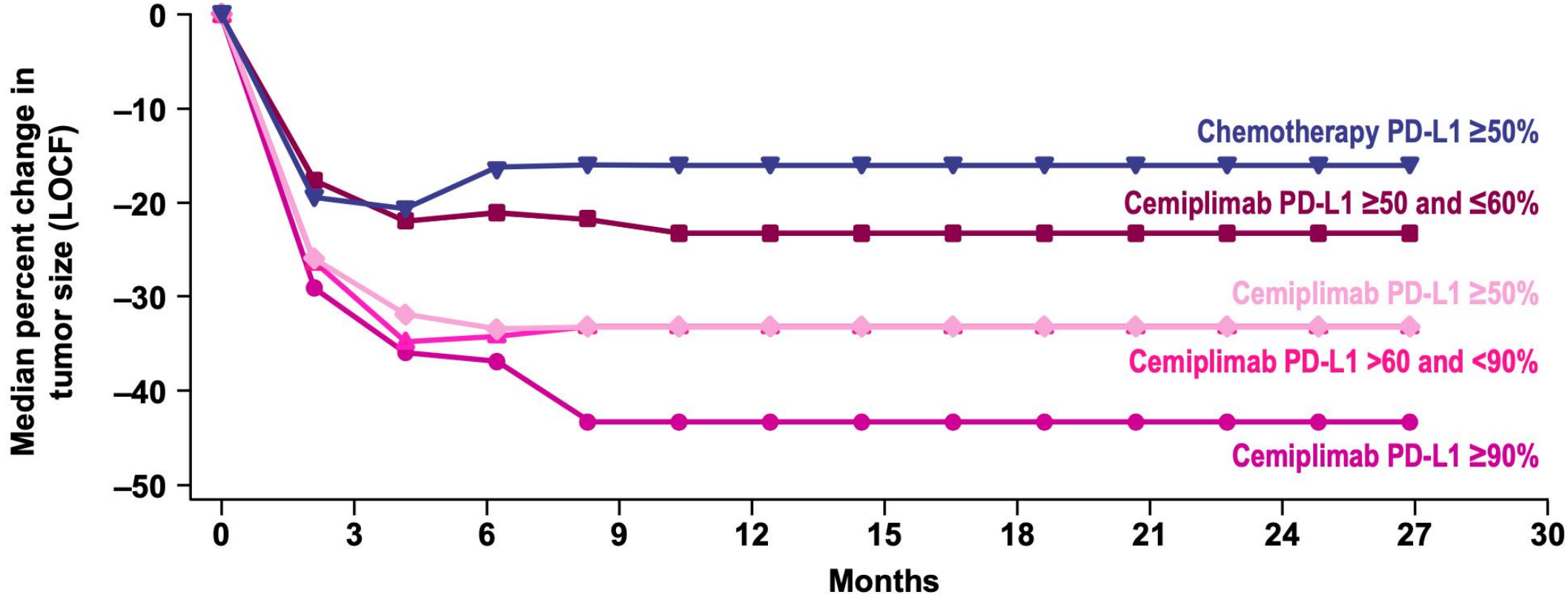
PD-L1 Expression Levels Correlate with Objective Response Rate (N=475)



CI, confidence interval; ORR, objective response rate; PD-L1, programmed cell death-ligand 1.

Data cut-off date: March 1, 2020

PD-L1 Expression Levels Correlate with Tumor Size Reduction (N=475)

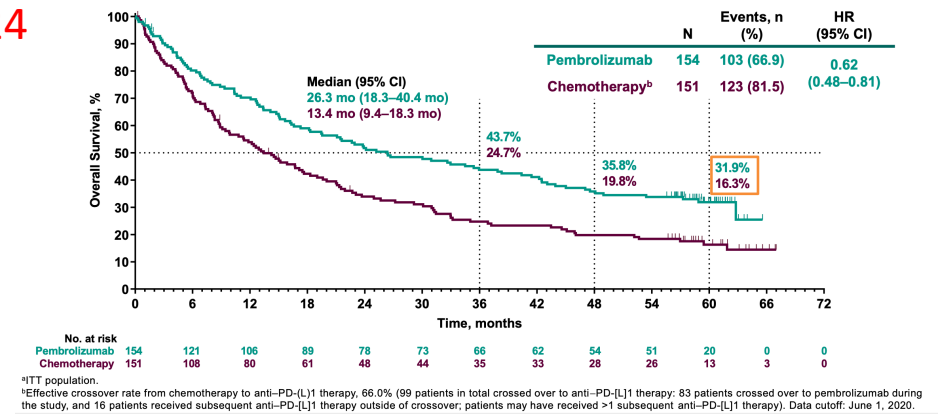


LOCF, last observation carried forward; PD-L1, programmed cell death-ligand 1.

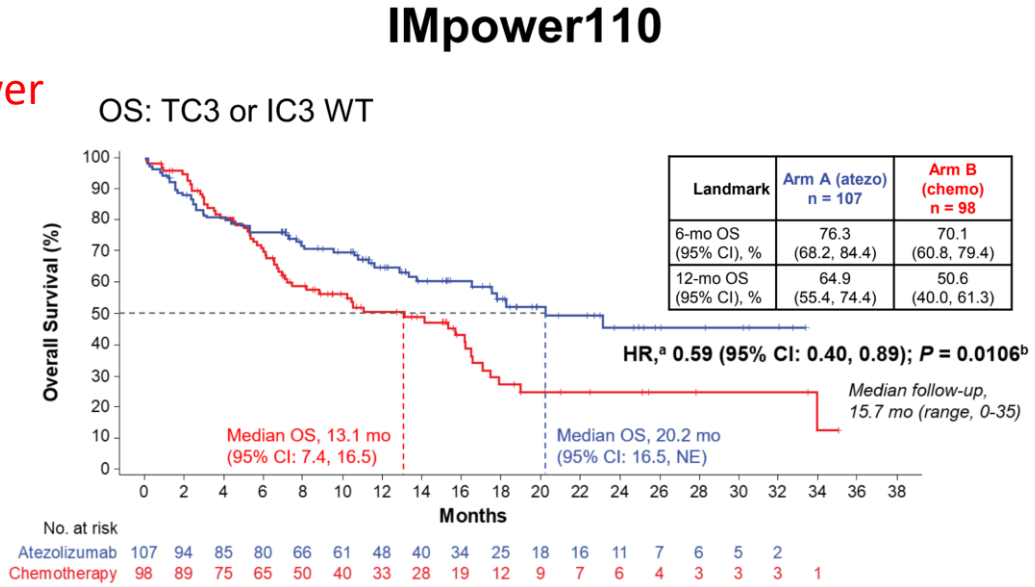
Data cut-off date: March 1, 2020

PDL1>50% Favor anti—PD(L)1

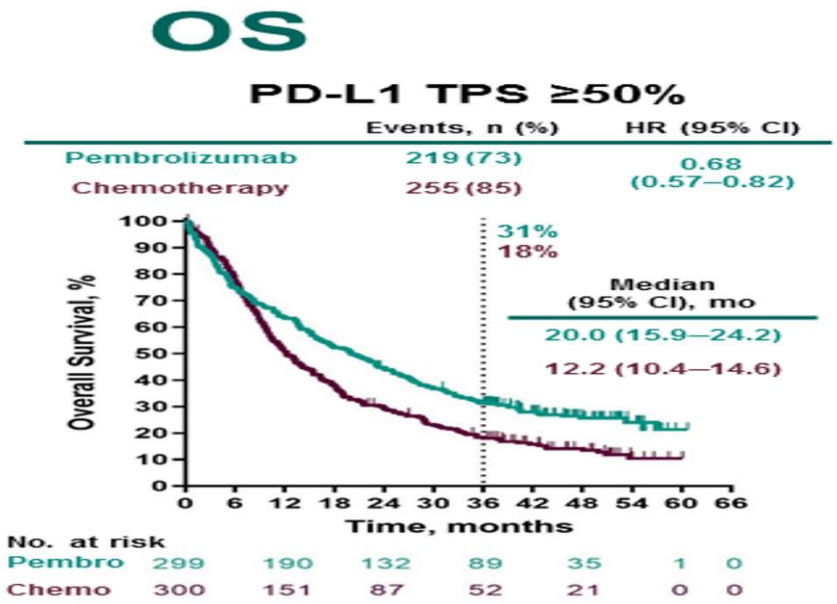
KN024



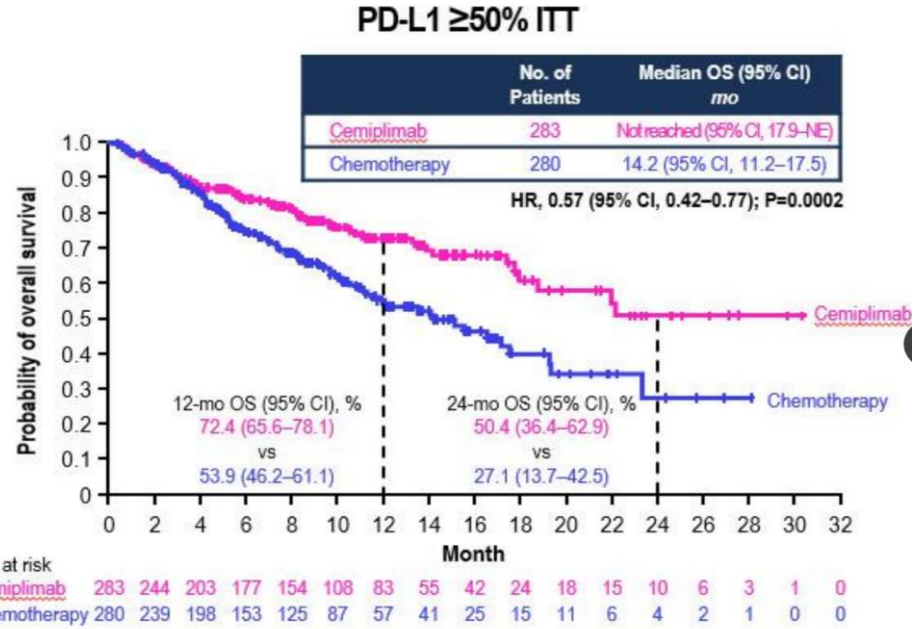
IMpower 110



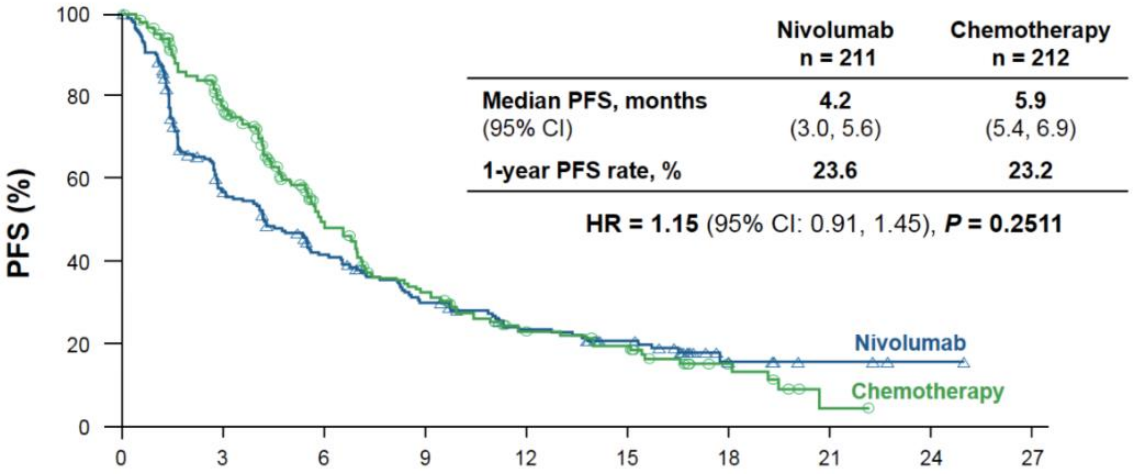
KN042



EMPOWER Lung 1



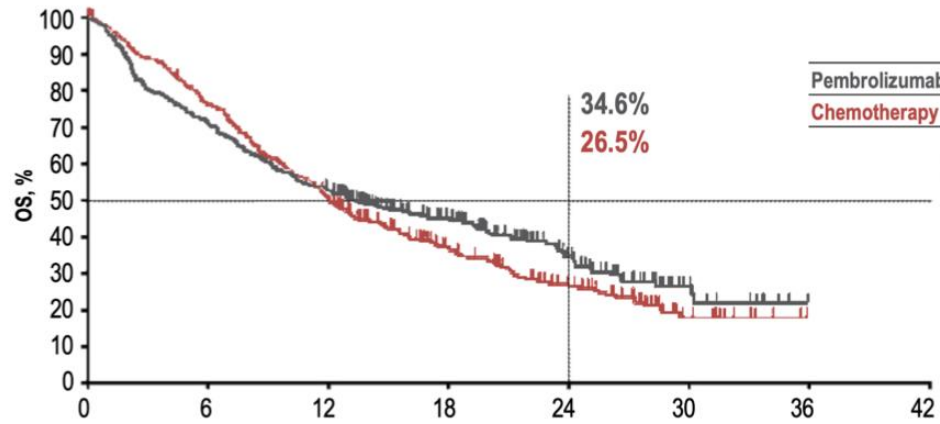
Thresholds < 50% do not favor anti-PD(L)-1 above chemo



	Nivolumab n = 211	Chemotherapy n = 212
Median PFS, months (95% CI)	**4.2** (3.0, 5.6)	**5.9** (5.4, 6.9)
1-year PFS rate, %	**23.6**	**23.2**

HR = 1.15 (95% CI: 0.91, 1.45), ***P* = 0.2511**

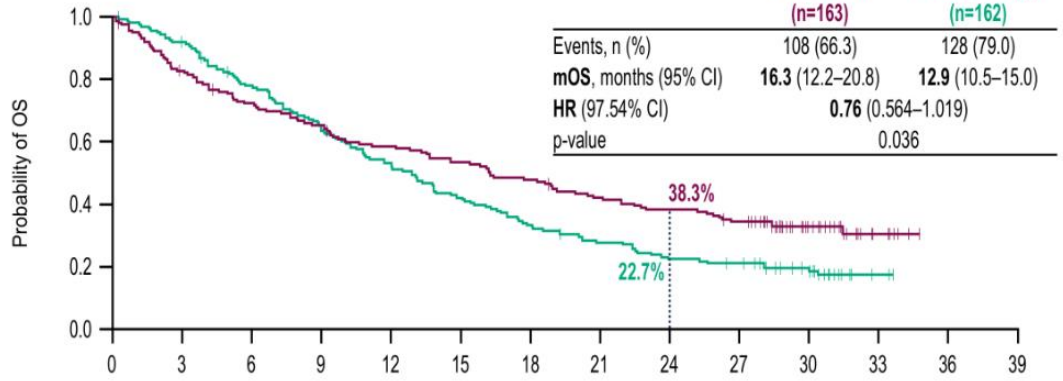
CheckMate 026: 5% PD-L1



	Events	HR (95% CI)
Pembrolizumab	214 (63.3%)	0.92 (0.77-1.11)
Chemotherapy	239 (70.9%)	

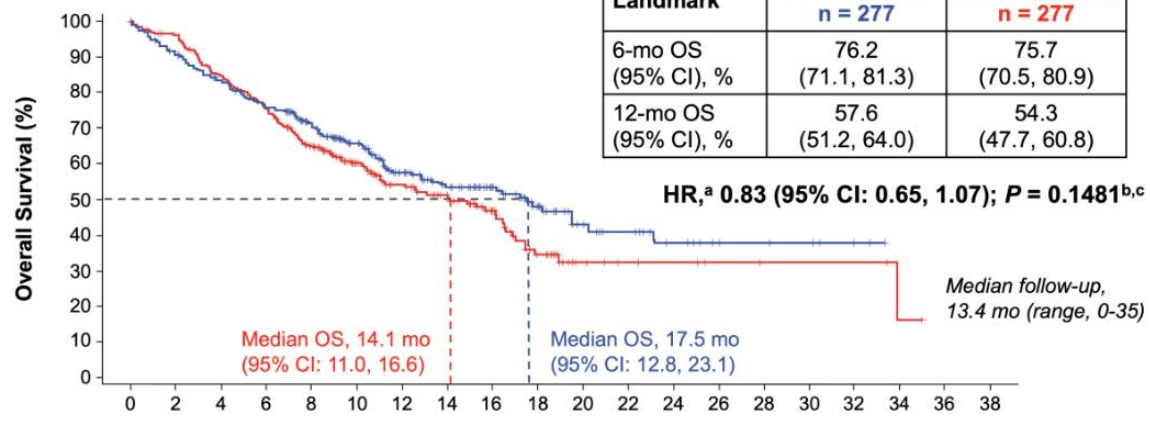
Median (95% CI)
13.4 mo (10.7-18.2)
12.1 mo (11.0-14.0)

KEYNOTE-042: PD-L1 1-49%



	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	

MYSTIC: 25% PD-L1



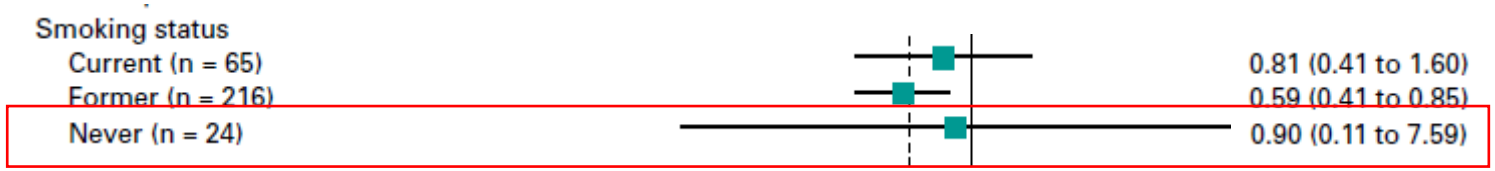
Landmark	Arm A (atezo) n = 277	Arm B (chemo) n = 277
6-mo OS (95% CI), %	76.2 (71.1, 81.3)	75.7 (70.5, 80.9)
12-mo OS (95% CI), %	57.6 (51.2, 64.0)	54.3 (47.7, 60.8)

HR,[a] 0.83 (95% CI: 0.65, 1.07); *P* = 0.1481[b,c]

IMPOWER 110: TC1/2/3 OR IC 1/ 2/3

Overall Survival PDL1>50% or TC3+IC3 Smoking status

Keynote024



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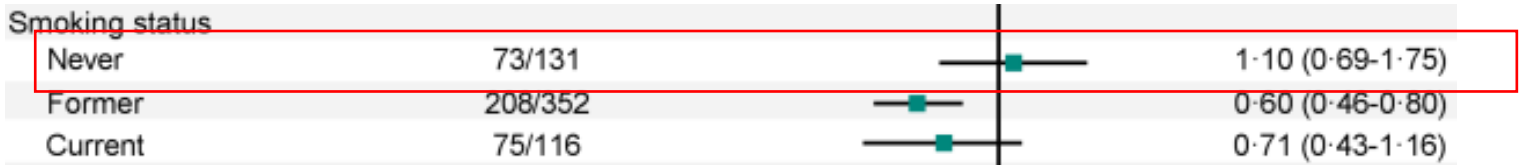

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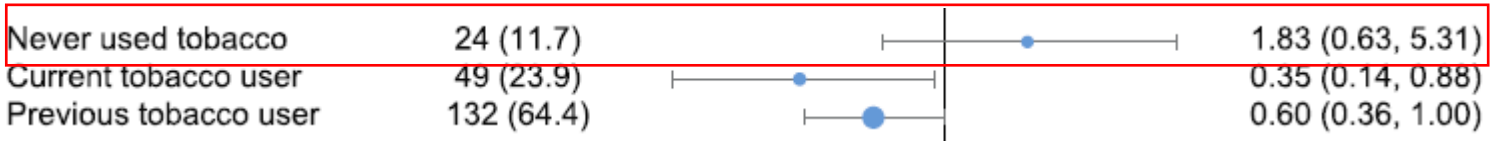
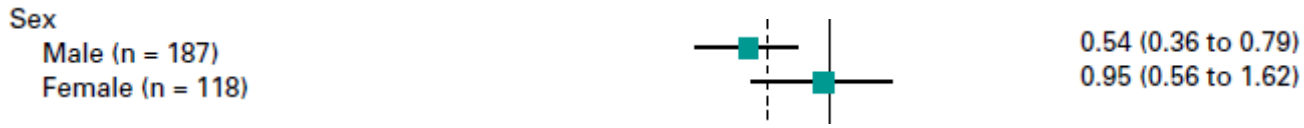


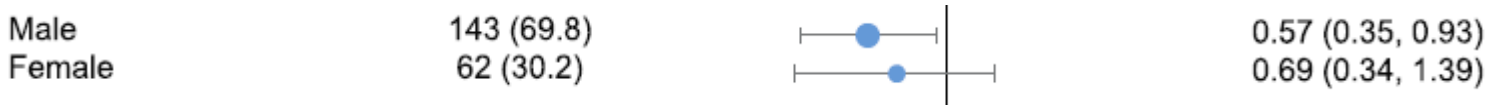
Overall Survival PDL1>50% or TC3+IC3 Female

Keynote024

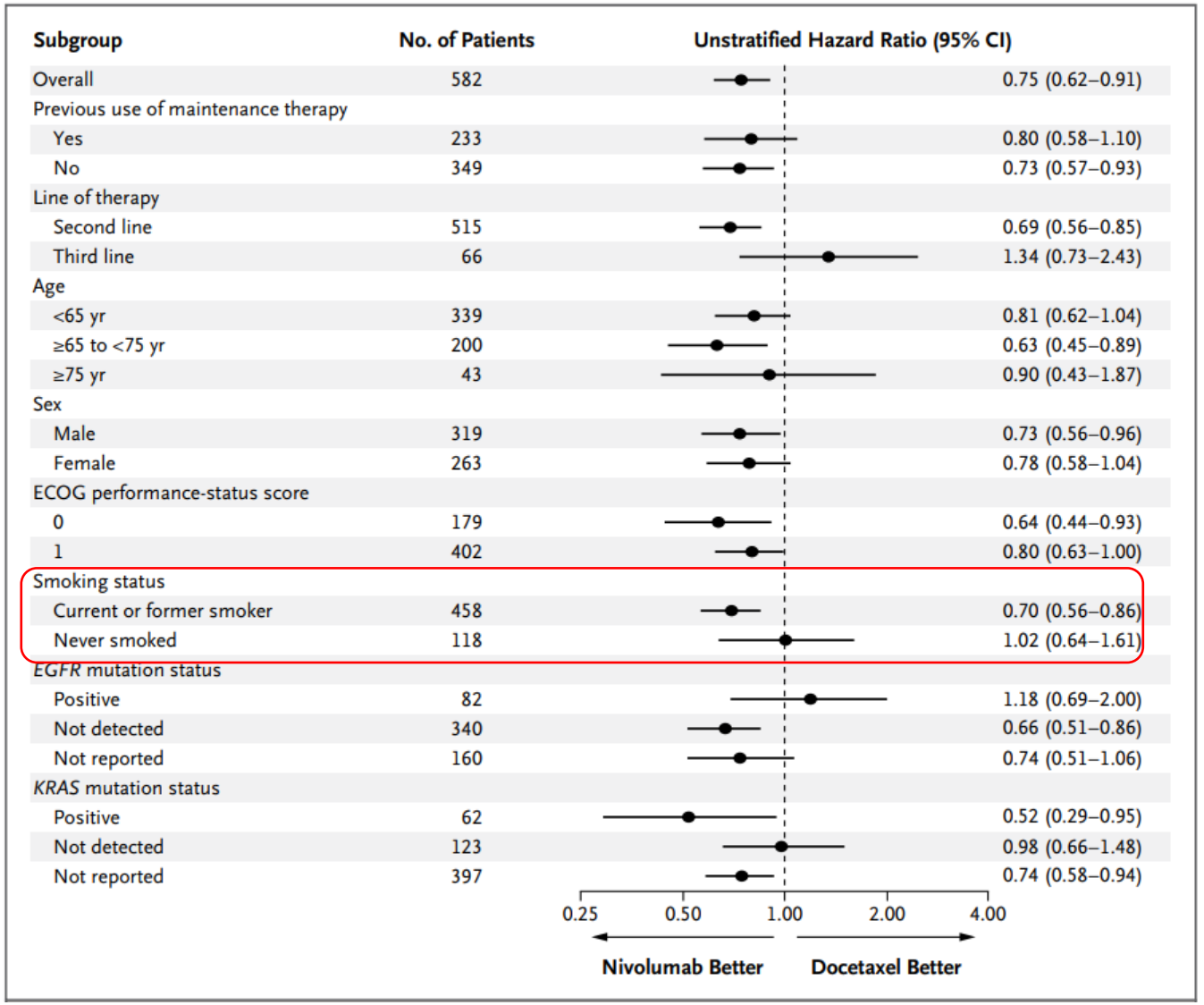


Keynote042

IMpower110

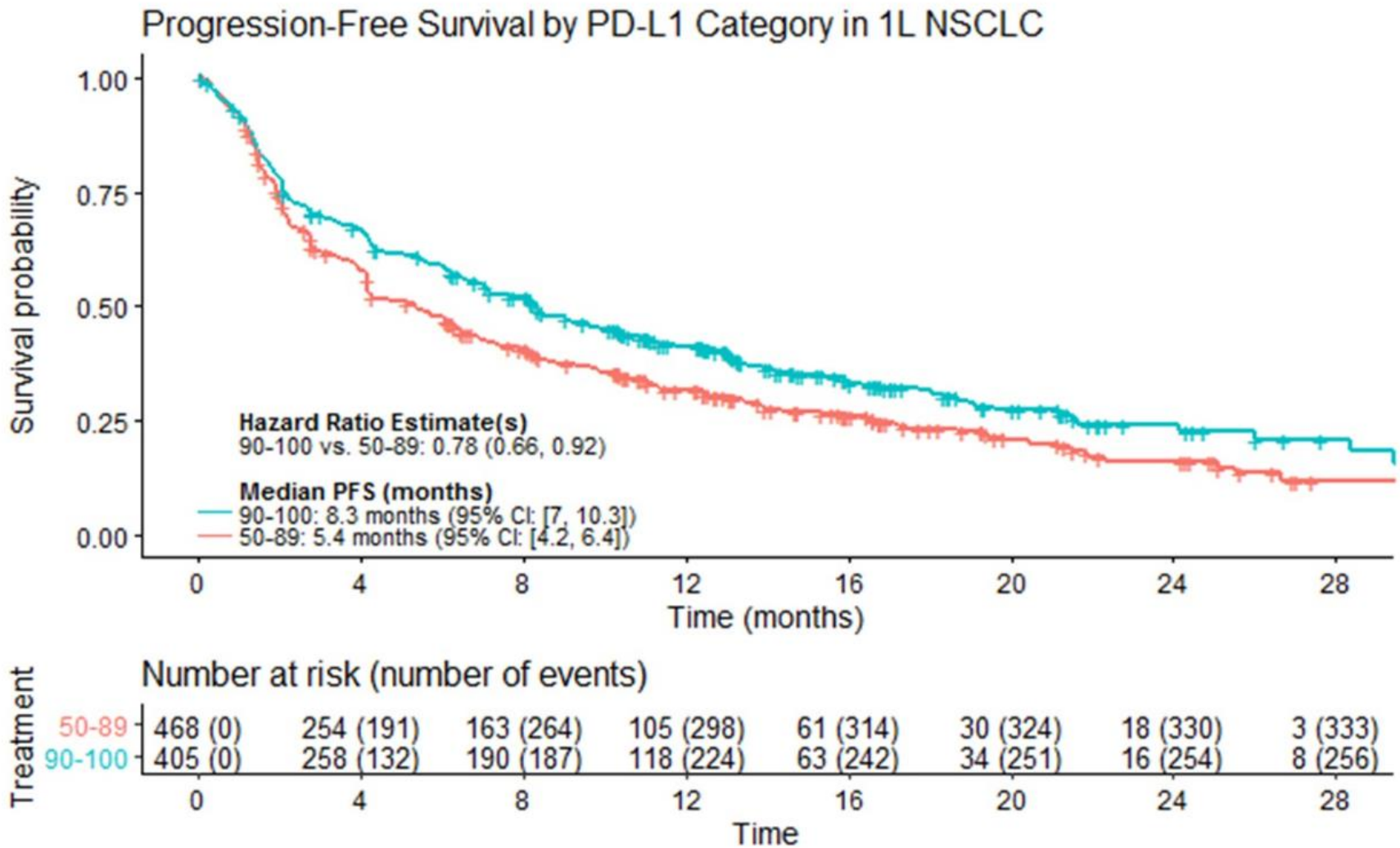


Checkmate057
Treatment effects on OS

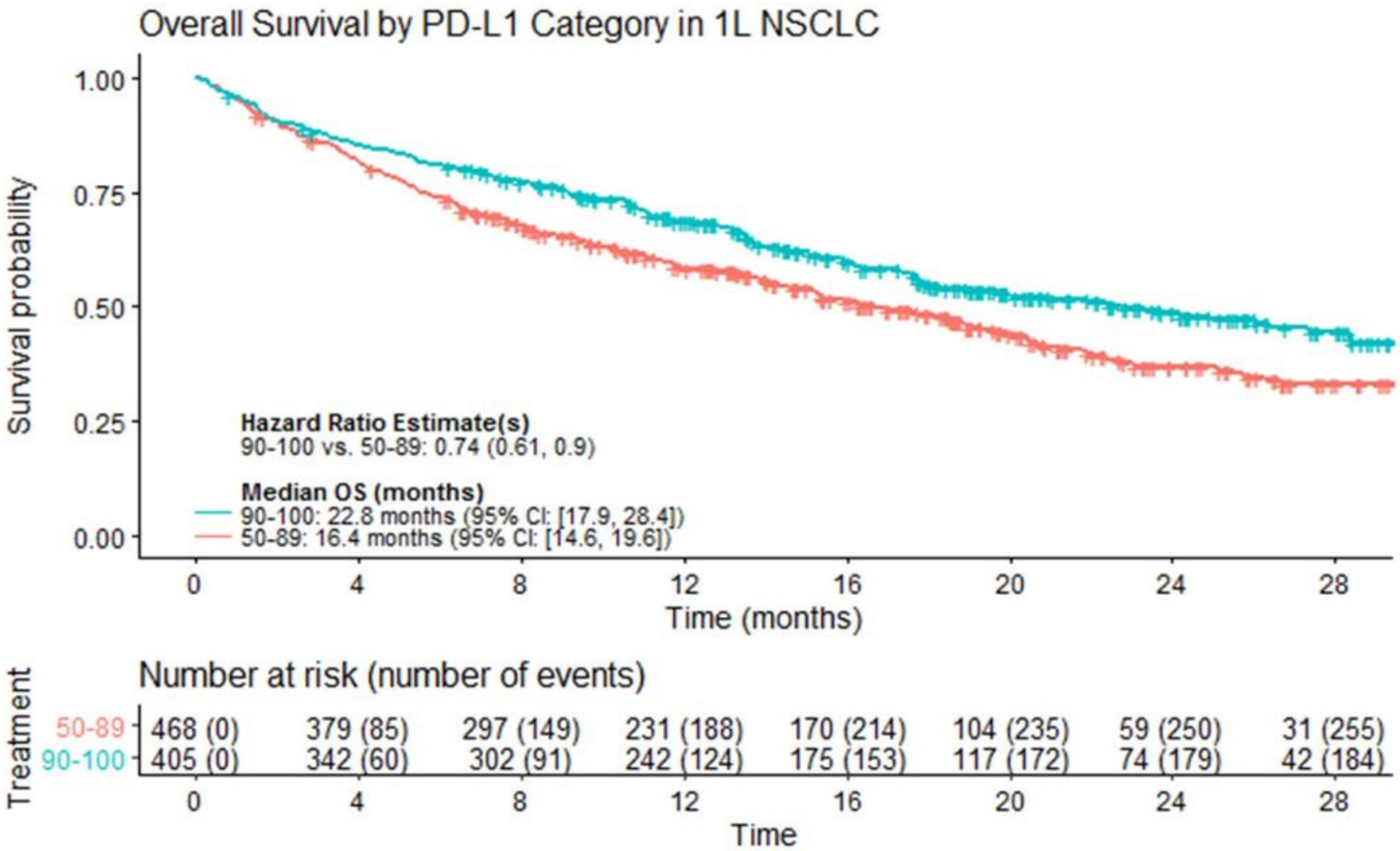


Outcomes in Patients with Advanced Non-Small Cell Lung Cancer (NSCLC) and High PD-L1 Expression Treated with Immune Checkpoint Inhibitor (ICI) Monotherapy: An FDA Pooled Analysis

Abstract 307323

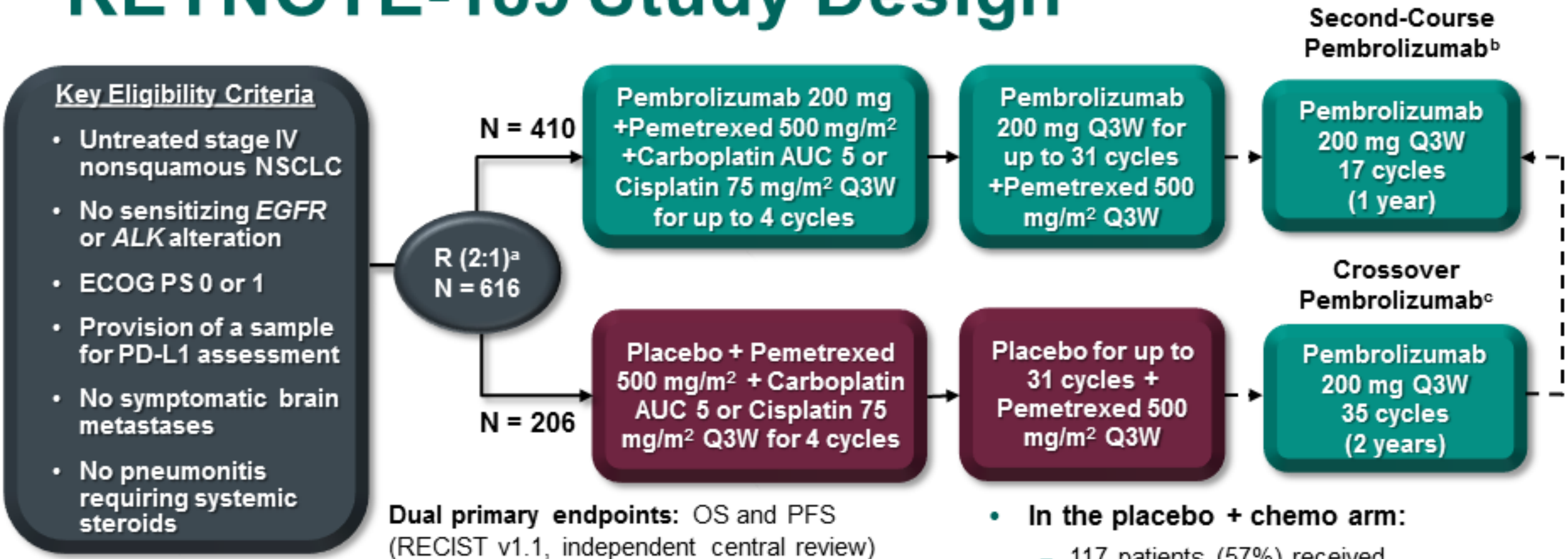


ASCO 2020


Overall Survival by PD-L1 Category in 1L NSCLC
Survival probability
1.00
0.75
0.50
0.25
0.00
Hazard Ratio Estimate(s)
90-100 vs. 50-89: 0.74 (0.61, 0.9)
Median OS (months)
90-100: 22.8 months (95% CI: [17.9, 28.4])
50-89: 16.4 months (95% CI: [14.6, 19.6])
0
4
8
12
16
20
24
28
Time (months)
Number at risk (number of events)
Treatment
50-89
90-100
468 (0)
379 (85)
297 (149)
231 (188)
170 (214)
104 (235)
59 (250)
31 (255)
405 (0)
342 (60)
302 (91)
242 (124)
175 (153)
117 (172)
74 (179)
42 (184)
0
4
8
12
16
20
24
28
Time

Immunotherapy+Chemotherapy in First Line

KEYNOTE-189 Study Design



Dual primary endpoints: OS and PFS (RECIST v1.1, independent central review)

Secondary endpoints: ORR, DOR and safety

Exploratory endpoint: PFS2

- **In the placebo + chemo arm:**
  - 117 patients (57%) received subsequent anti–PD-(L)1 therapy, including on-study crossover

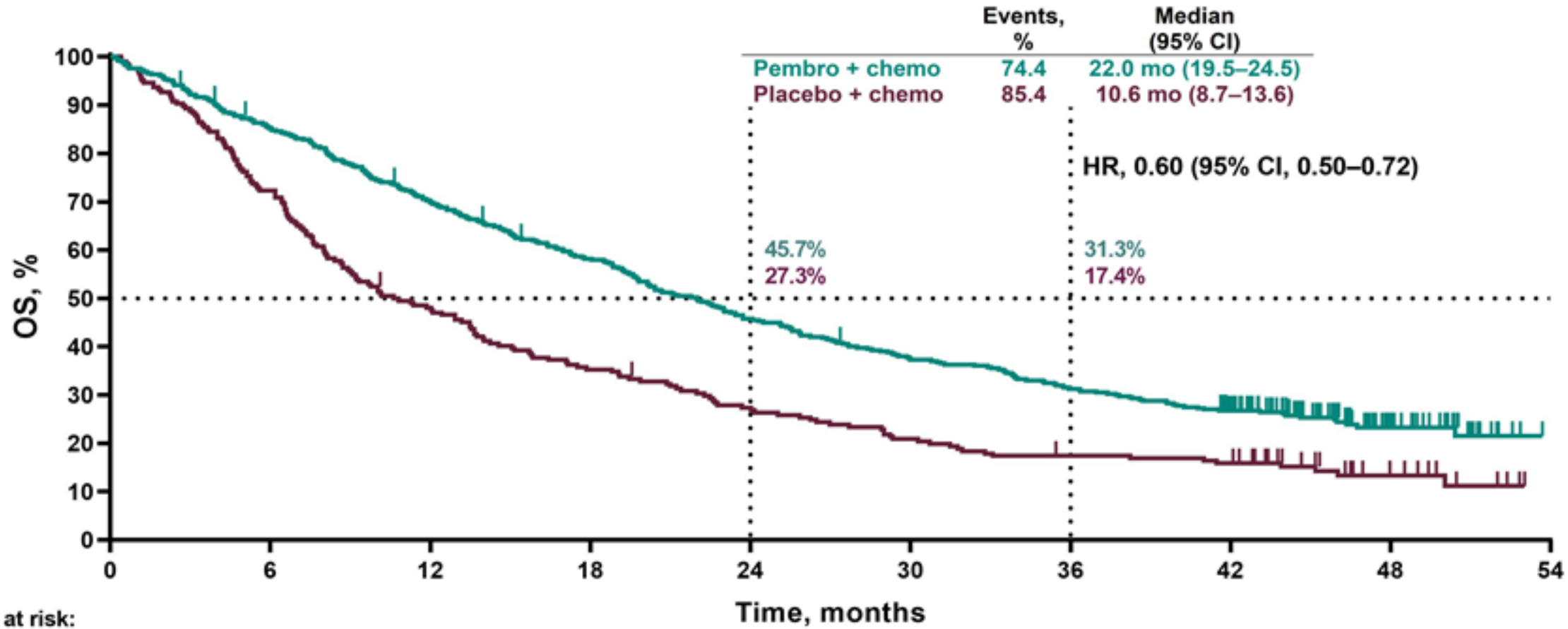
PFS2 defined as time from randomization to investigator-assessed disease progression that led to cessation of second-line therapy, start of third-line therapy, or death. [a]Randomization was stratified by: PD-L1 expression (TPS ≥1% vs <1%), platinum chemotherapy (cisplatin vs carboplatin), and smoking status (never vs former/current). [b]Patients who had SD or better after completing 35 cycles of pembrolizumab or had stopped trial treatment after achieving CR and received ≥8 cycles of treatment, but then experienced PD, could receive second-course pembrolizumab for 17 cycles (~1 year) if they had received no new anticancer therapy since the last dose of pembrolizumab. [c]Patients could cross over to pembrolizumab monotherapy after PD per RECIST v1.1 by blinded independent central review.

Baseline Characteristics

Characteristic	Pembro + Chemo N = 410	Placebo + Chemo N = 206	35 Cycles (2 Years) of Pembrolizumab N = 56
Age, y, median (range)	65 (34–84)	63.5 (34–84)	66.5 (42–82)
Male	254 (62.0)	109 (52.9)	33 (58.9)
ECOG PS 1	221 (53.9)	126 (61.2)	21 (37.5)
Current/former smoker	362 (88.3)	181 (87.9)	51 (91.1)
Brain metastases	73 (17.8)	35 (17.0)	6 (10.7)
PD-L1 TPS			
<1%	127 (31.0)	63 (30.6)	6 (10.7)
≥1%	260 (63.4)	128 (62.1)	47 (83.9)
Not evaluable	23 (5.6)	15 (7.3)	3 (5.4)
Platinum chemotherapy			
Cisplatin	113 (27.6)	58 (28.2)	16 (28.6)
Carboplatin	297 (72.4)	148 (71.8)	40 (71.4)
Race			
Asian	10 (2.4)	8 (3.9)	0
Black or African American	11 (2.7)	3 (1.5)	0
White	387 (94.4)	194 (94.2)	55 (98.2)
Missing	2 (0.5)	1 (0.5)	1 (1.8)

Data in table are n (%) unless otherwise noted. Data cutoff: August 28, 2020.

OS, ITT Population



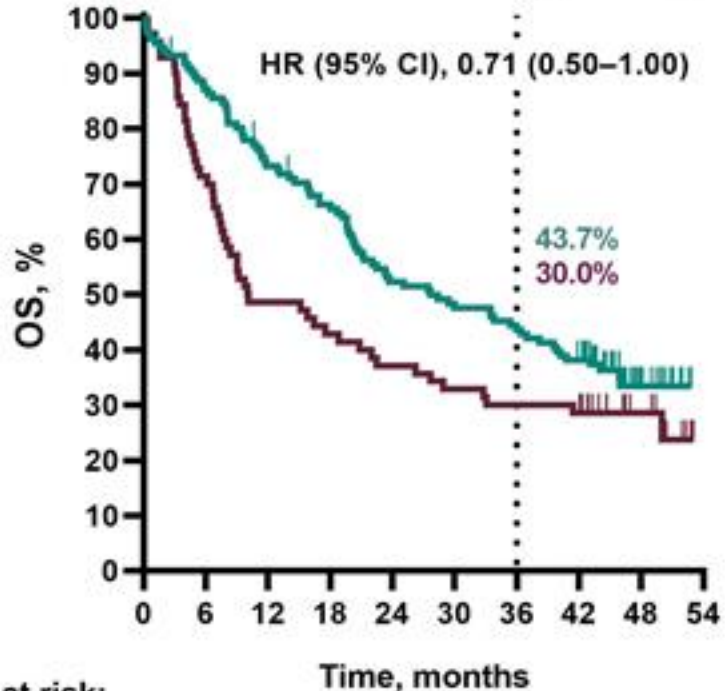
No. at risk:									
Pembro + chemo	410	347	283	234	184	149	125	99	28	0
Placebo + chemo	206	149	98	72	55	42	34	29	10	0

Data cutoff: August 28, 2020.

OS by PD-L1 TPS

PD-L1 TPS ≥50%

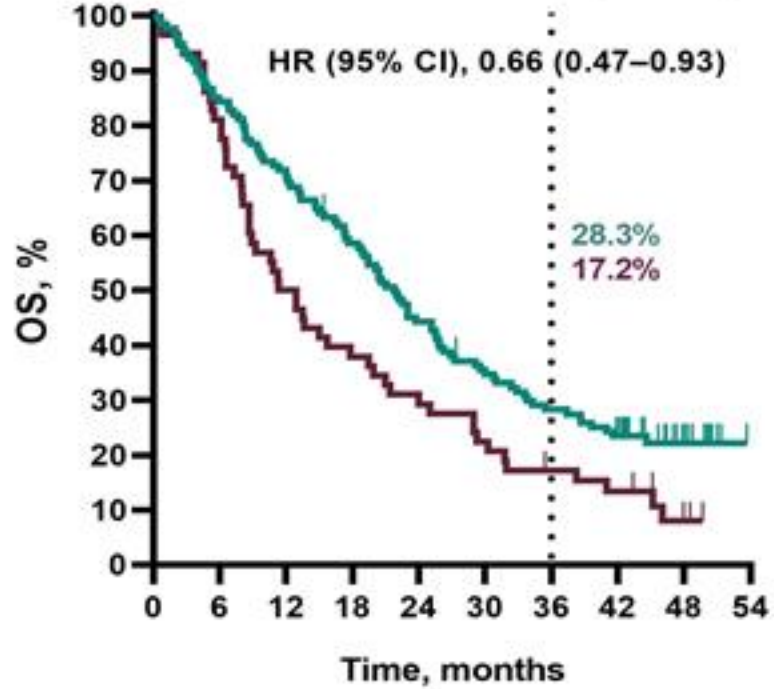
	Events, %	Median, mo (95% CI)
Pembro + chemo	63.6	27.7 (20.4–38.2)
Placebo + chemo	72.9	10.1 (7.5–22.0)



No. at risk:				
Pembro + chemo	132	85	56	0
Placebo + chemo	70	30	21	0

PD-L1 TPS 1–49%

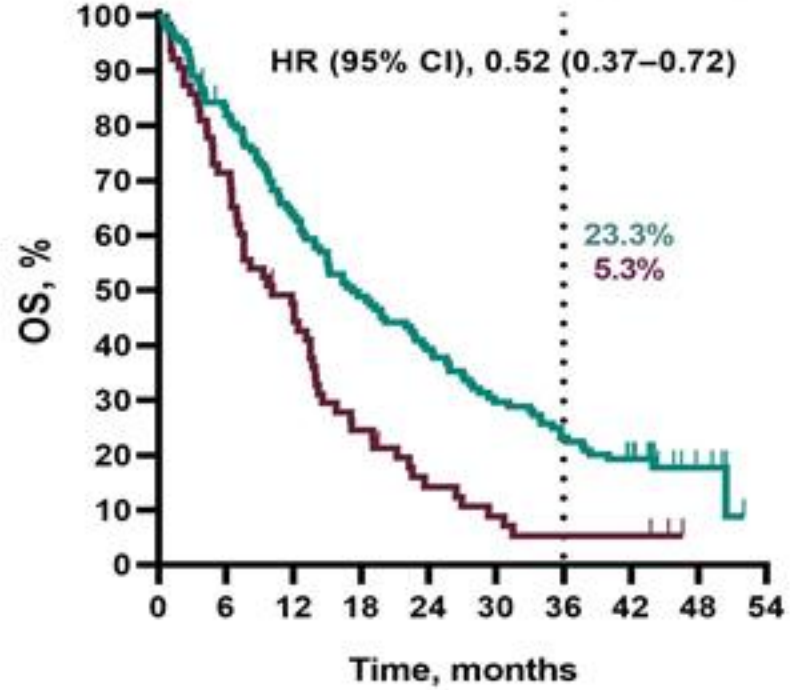
	Events, %	Median, mo (95% CI)
Pembro + chemo	76.6	21.8 (17.7–25.6)
Placebo + chemo	89.7	12.1 (8.7–19.4)



Pembro + chemo	128	74	35	0
Placebo + chemo	58	22	9	0

PD-L1 TPS <1%

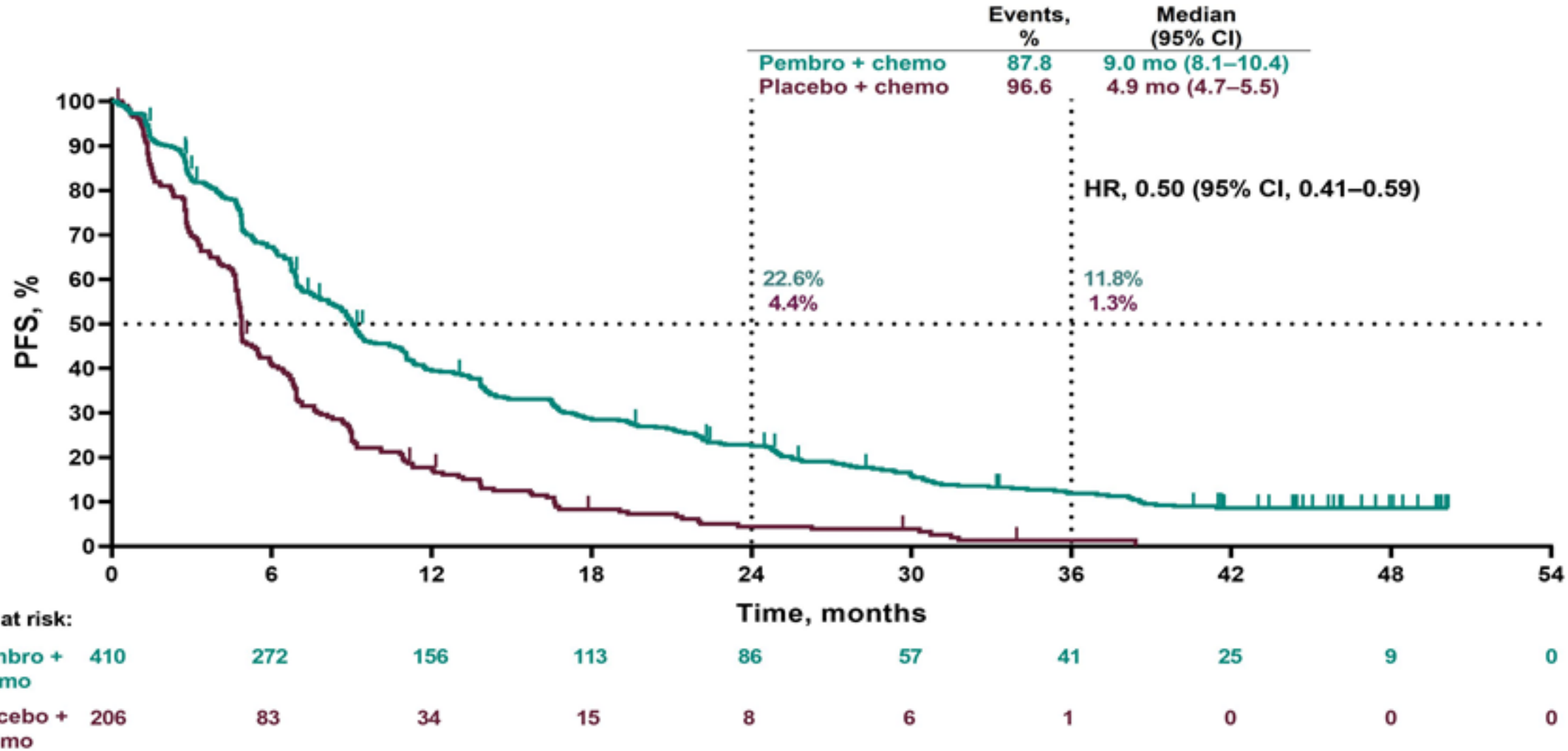
	Events, %	Median, mo (95% CI)
Pembro + chemo	81.1	17.2 (13.8–22.8)
Placebo + chemo	92.1	10.2 (7.0–13.5)



Pembro + chemo	127	61	29	0
Placebo + chemo	63	15	3	0

Data cutoff: August 28, 2020.

PFS,[a] ITT Population

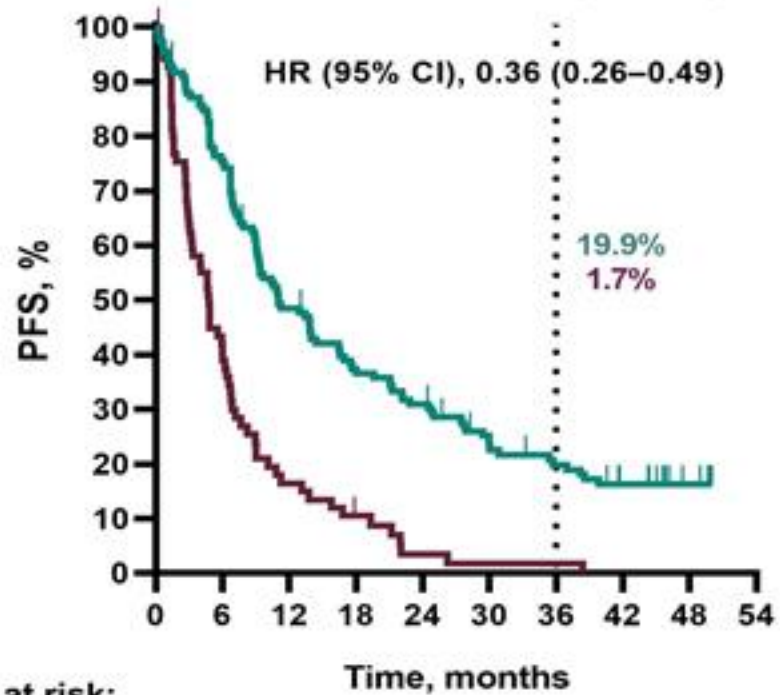


[a]Based on blinded independent central review per RECIST v1.1.
Data cutoff: August 28, 2020.

PFS[a] by PD-L1 TPS

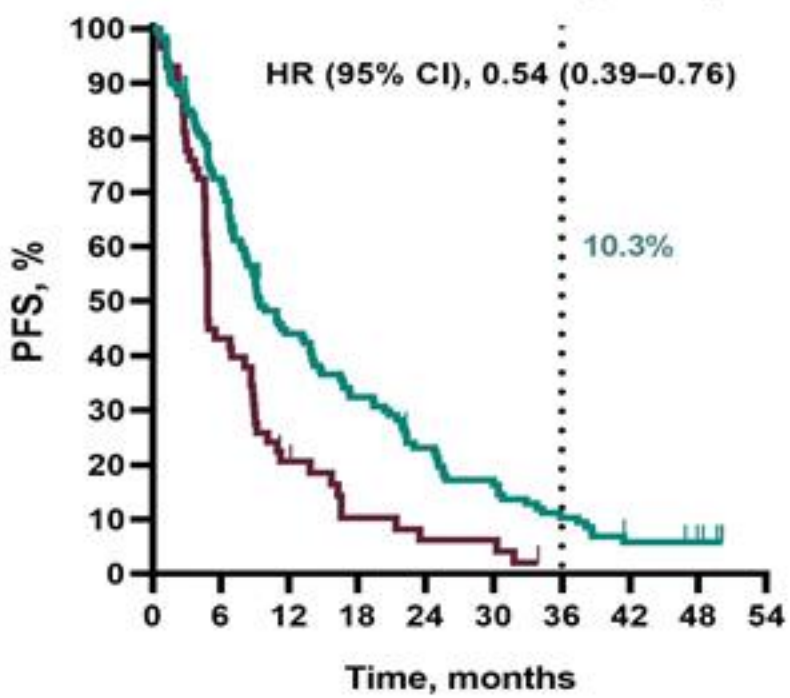
PD-L1 TPS ≥50%

	Events, %	Median, mo (95% CI)
Pembro + chemo	80.3	11.1 (9.1–16.4)
Placebo + chemo	95.7	4.8 (3.1–6.2)



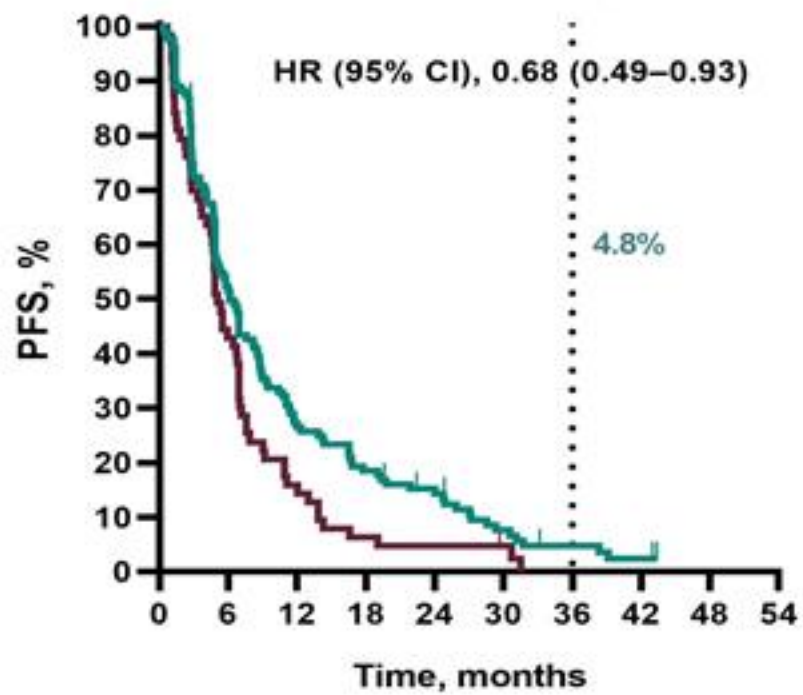
PD-L1 TPS 1–49%

	Events, %	Median, mo (95% CI)
Pembro + chemo	89.8	9.4 (8.1–13.8)
Placebo + chemo	94.8	4.9 (4.7–8.6)



PD-L1 TPS <1%

	Events, %	Median, mo (95% CI)
Pembro + chemo	93.7	6.2 (4.9–8.3)
Placebo + chemo	98.4	5.1 (4.5–6.8)

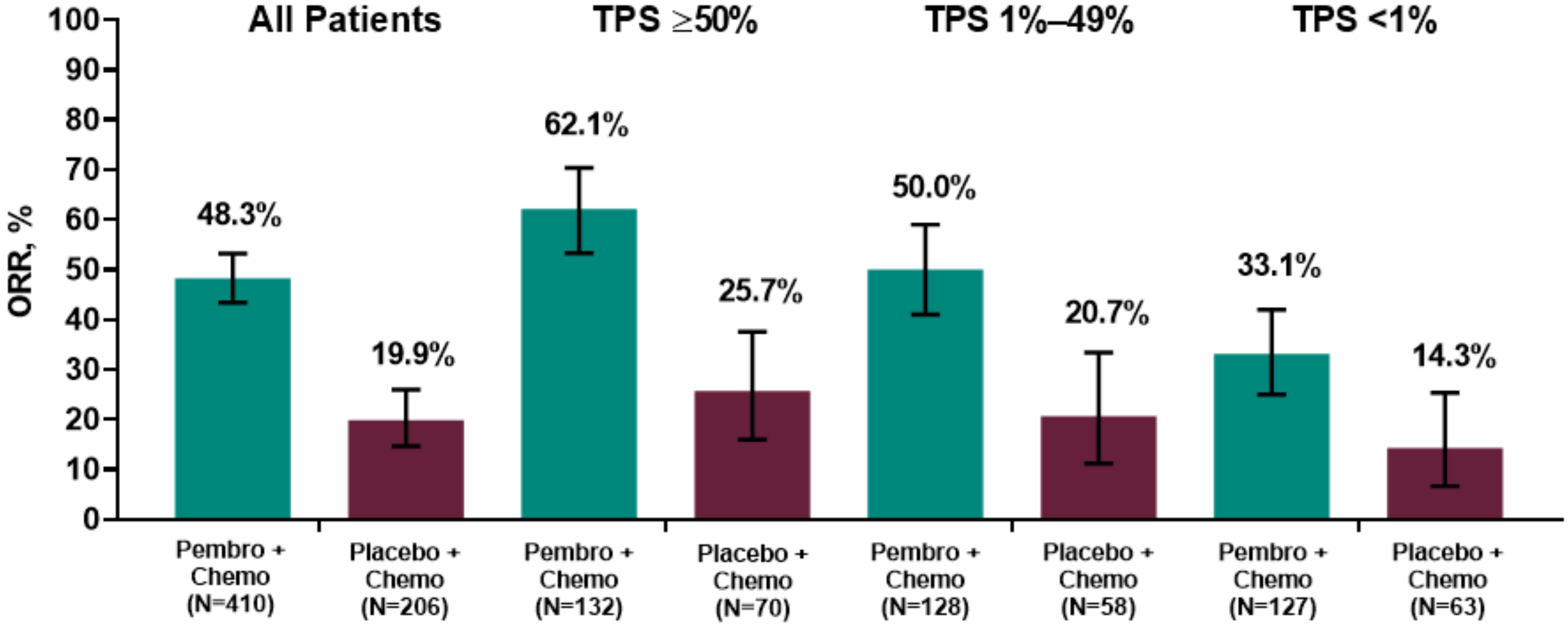


No. at risk:

Pembro + chemo	132	47	22	0	128	39	12	0	127	23	4	0
Placebo + chemo	70	6	1	0	58	5	0	0	63	4	0	0

[a]Based on blinded independent central review per RECIST v1.1.
Data cutoff: August 28, 2020.

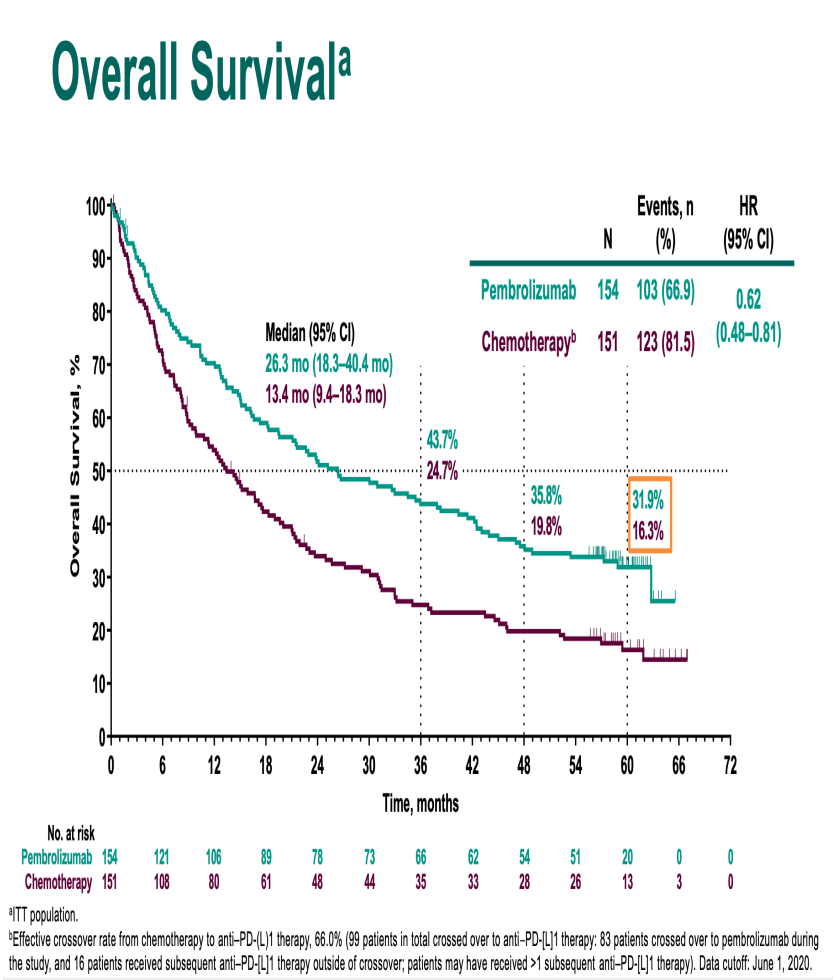
ORR and DOR[a]



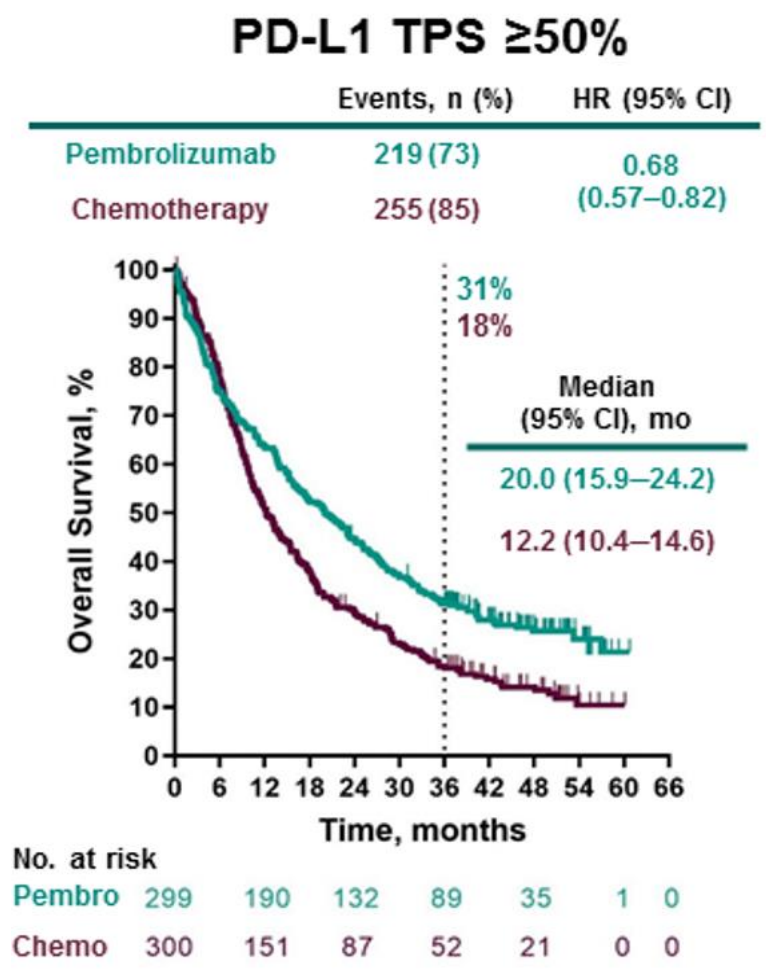
Median DOR, (range)	**12.6 (1.1+ to 48.7+)**	**7.1 (2.4 to 31.5)**	**15.1 (1.2+ to 48.5+)**	**7.1 (3.4 to 31.5)**	**13.6 (2.1+ to 48.7+)**	**7.6 (2.4 to 31.0+)**	**10.8 (1.1+ to 41.4+)**	**7.8 (4.1 to 28.3+)**

[a]Based on blinded independent central review per RECIST v1.1. "+" indicates there is no progressive disease by the time of last disease assessment.
Data cutoff: August 28, 2020.

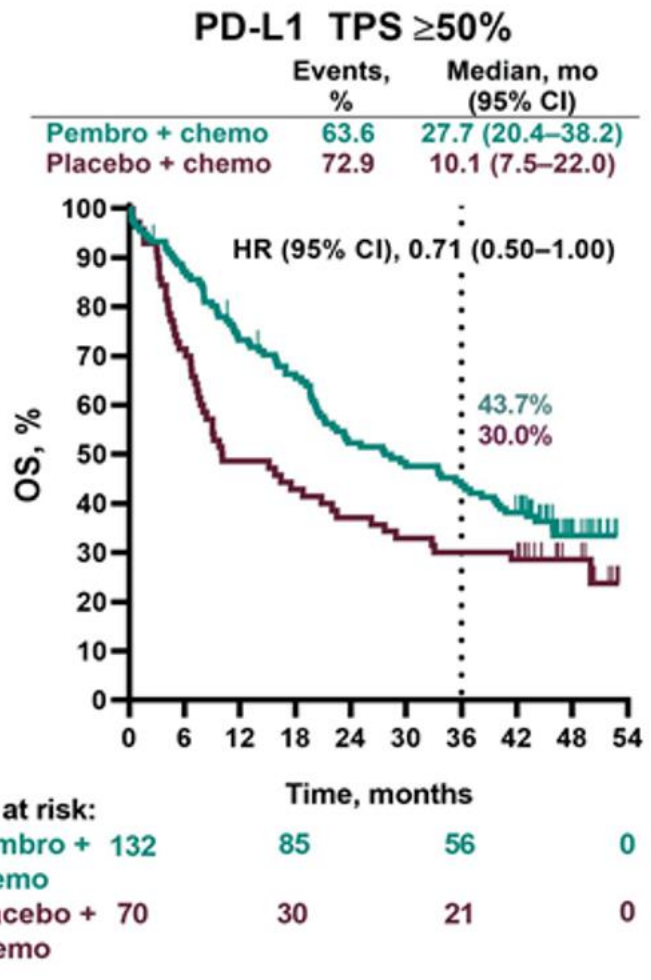
IO Alone or Chemotherapy Combo in PDL1>50%



KN024



KN042

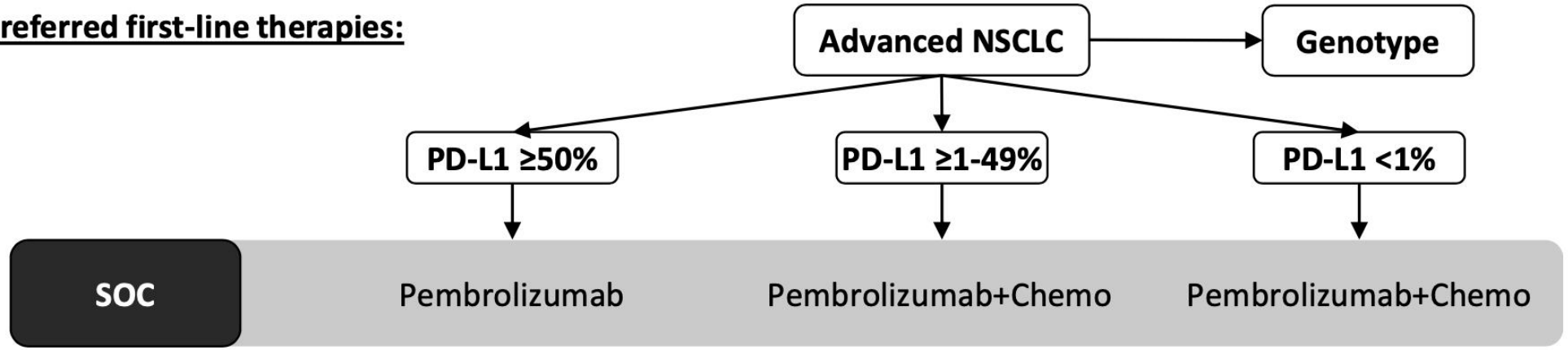


KN189

Immunotherapy alone or with chemotherapy in advanced NSCLC? Utility of clinical factors and blood-based host immune profiling

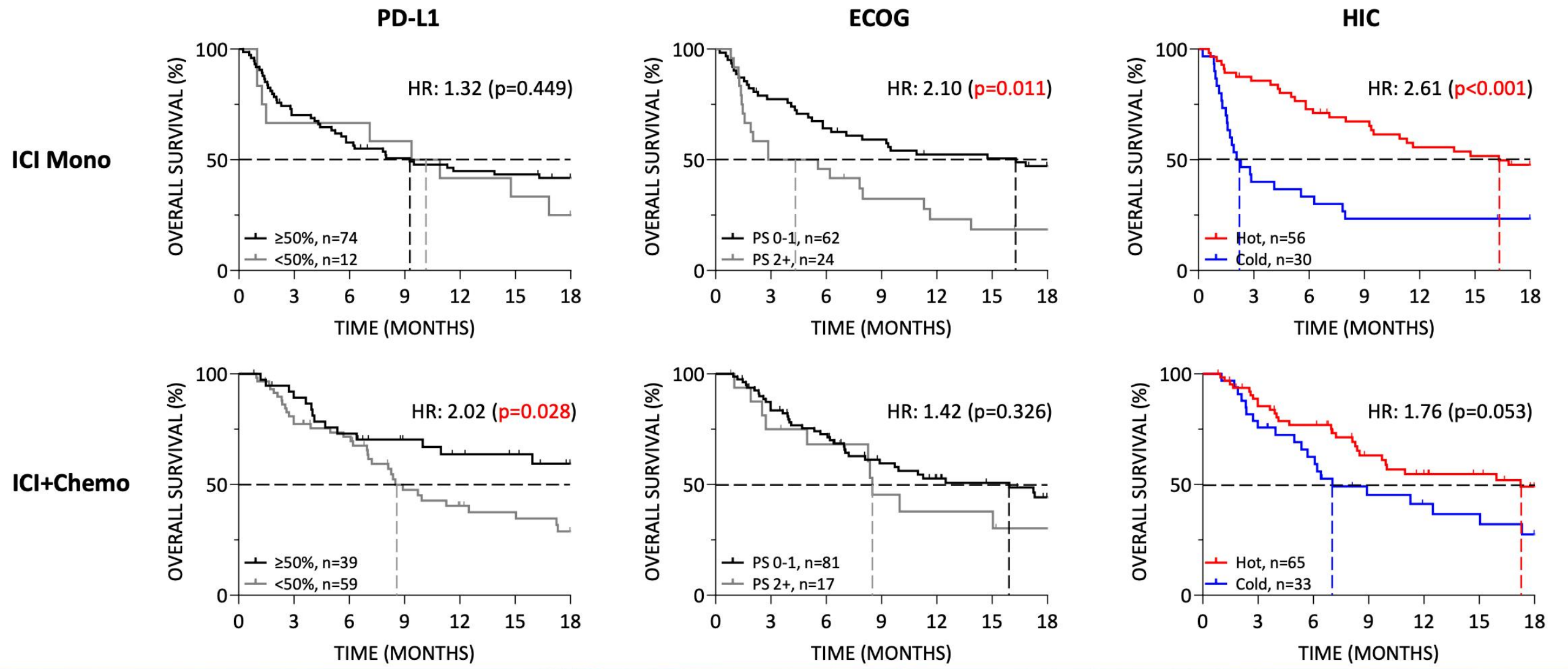
Wallace Akerley
Huntsman Cancer Institute
Salt Lake City, UT, USA

Current preferred first-line therapies:



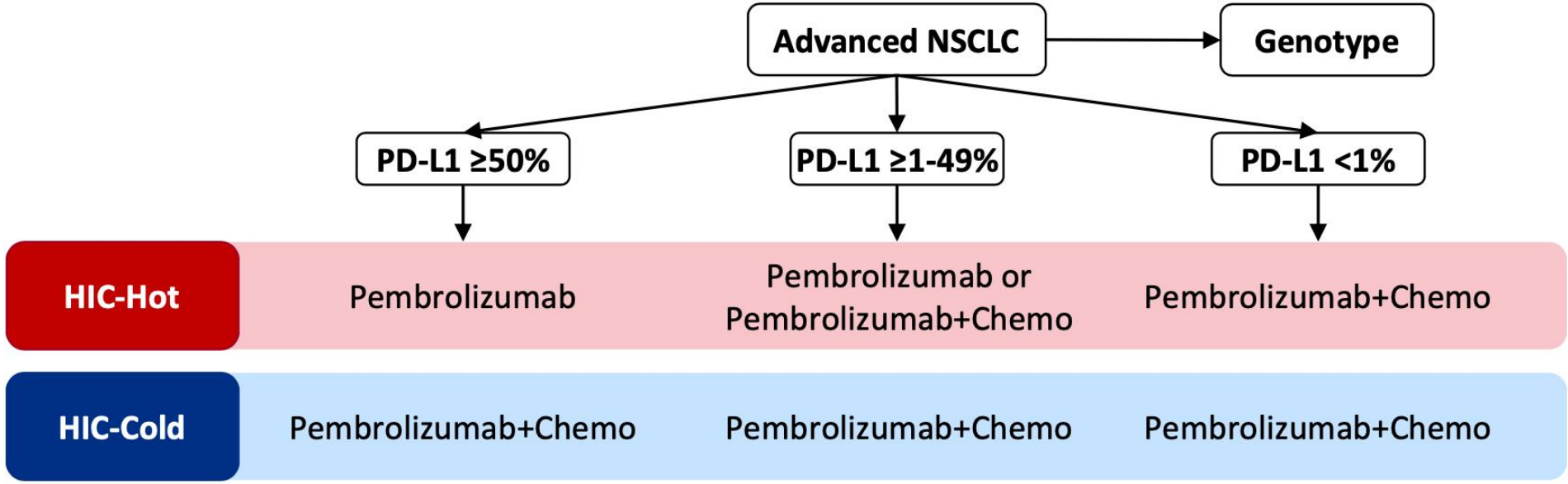
INSIGHT observational trial (NCT03289780):

- Currently >3700 subjects enrolled across 35 sites in the US (goal n=5000)
- NSCLC of all stages, all histologies, all lines of therapies, all ECOG PS eligible; up to 3-year follow-up
- Host Immune Profiling:
  - Clinically validated, blood-based proteomic classifier that utilizes mass spectrometry and machine learning algorithm to designate labels: HIC-Hot or HIC-Cold
  - HIC-Cold: chronic inflammatory disease state associated with poor prognosis

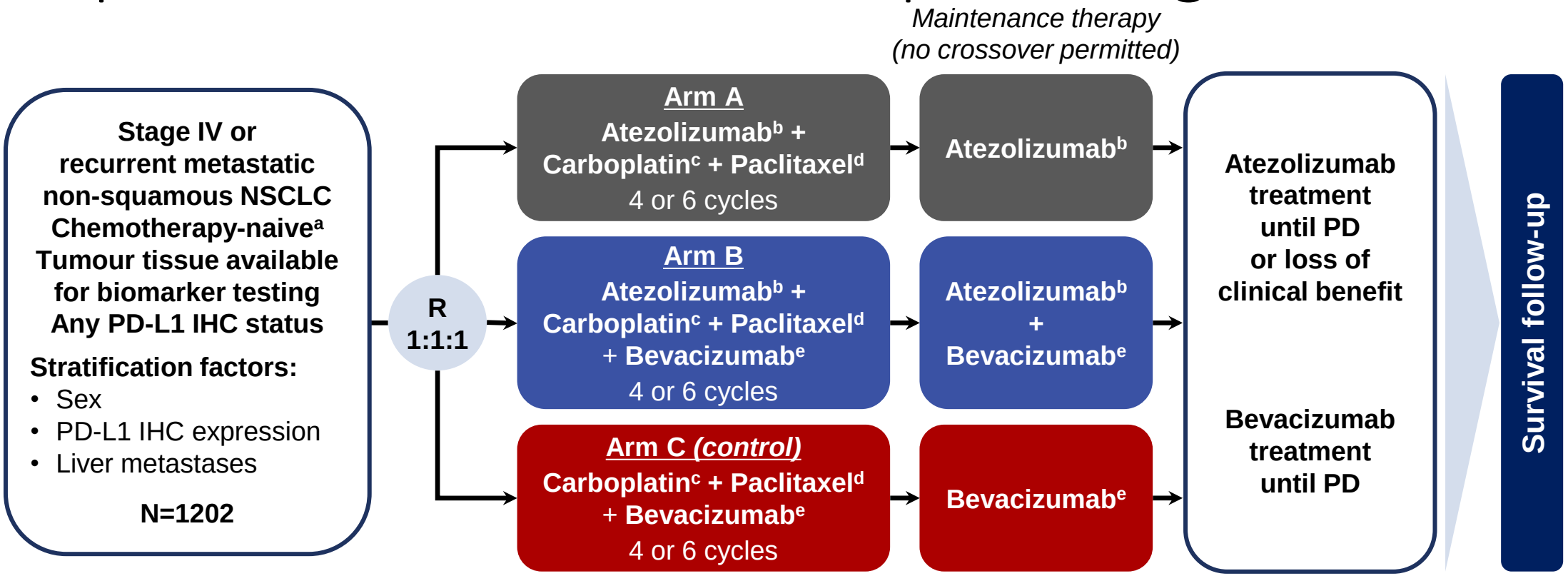

PD-L1
ECOG
HIC
ICI Mono
ICI+Chemo
OVERALL SURVIVAL (%)
TIME (MONTHS)
HR: 1.32 (p=0.449)
≥50%, n=74
<50%, n=12
HR: 2.10 (p=0.011)
PS 0-1, n=62
PS 2+, n=24
HR: 2.61 (p<0.001)
Hot, n=56
Cold, n=30
HR: 2.02 (p=0.028)
≥50%, n=39
<50%, n=59
HR: 1.42 (p=0.326)
PS 0-1, n=81
PS 2+, n=17
HR: 1.76 (p=0.053)
Hot, n=65
Cold, n=33

Combining blood-based Host Immune Profiling, PD-L1 and clinical factors might provide better prediction of response to ICI treatments and could guide treatment selection.

Proposed addition to treatment algorithm:



IMpower150: A randomised, phase III global trial



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

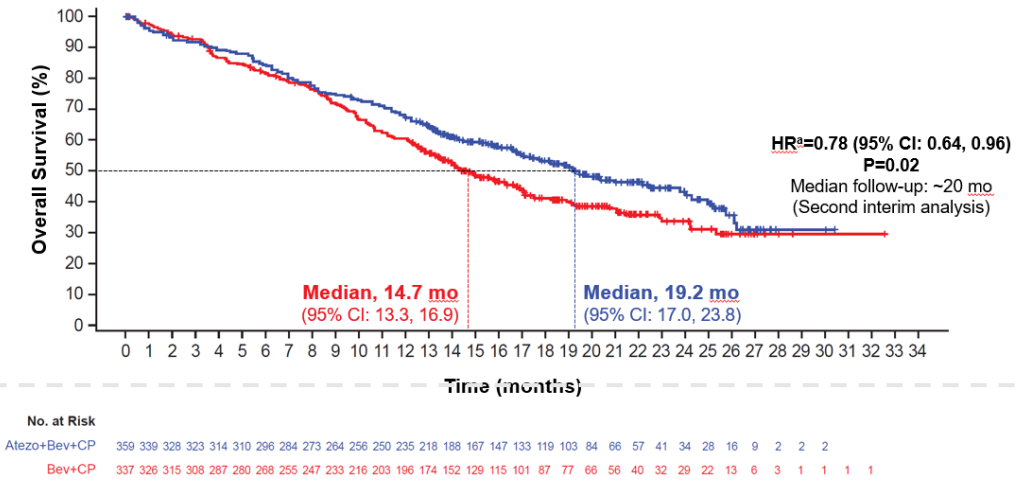
[a]Patients with a sensitising *EGFR* mutation or *ALK* translocation must have disease progression or intolerance to treatment with one or more approved targeted therapies. [b]Atezolizumab: 1200mg IV q3w. [c]Carboplatin: AUC 6 IV q3w. [d]Paclitaxel: 200mg/m^2 IV q3w. [e]Bevacizumab: 15mg/kg IV q3w.

Socinski et al. NEJM 2018

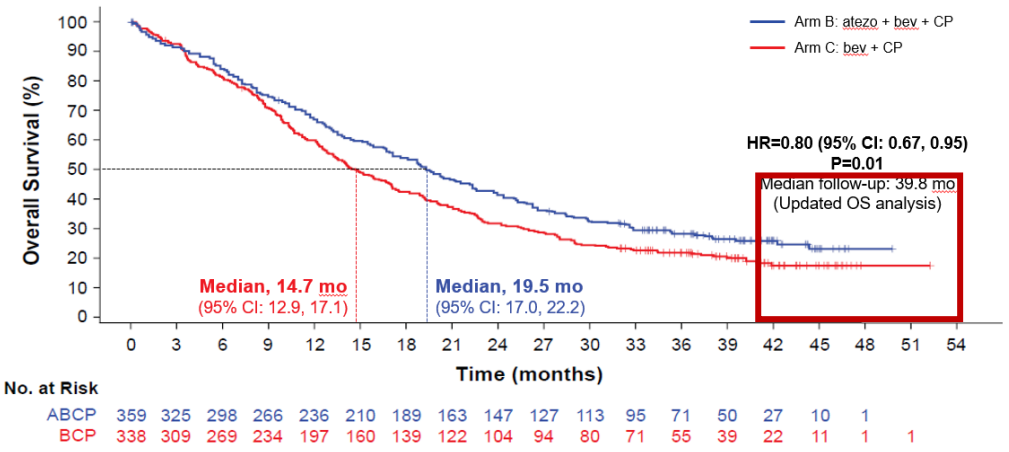
IMpower150: OS in the ITT-WT population a,b,c

Arm B (atezo + bev + CP) vs Arm C (bev + CP)

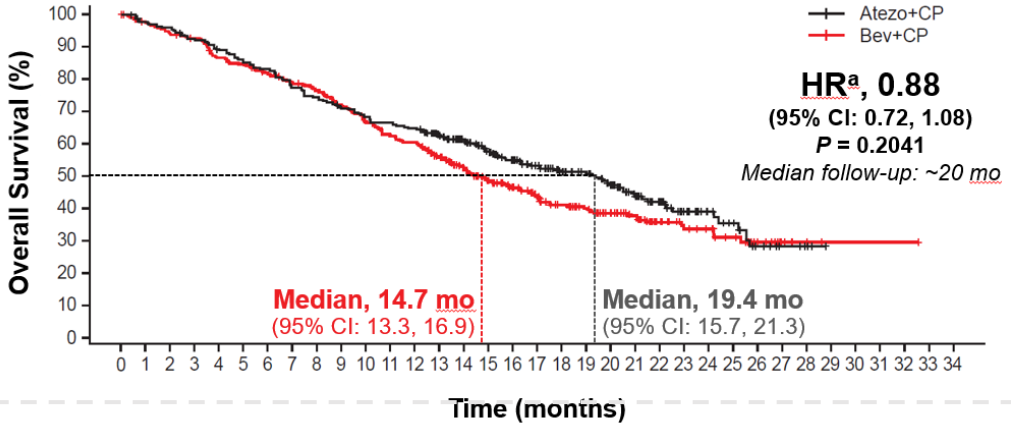
2018 ASCO
(F/U 20 mths)

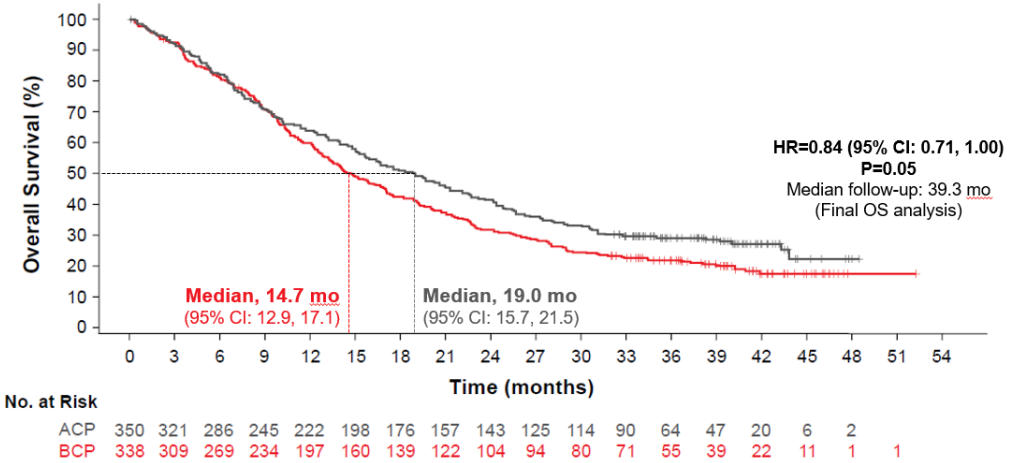


2020 AACR
(F/U 39.8 mths)



Arm A (atezo + CP) vs Arm C (bev + CP)

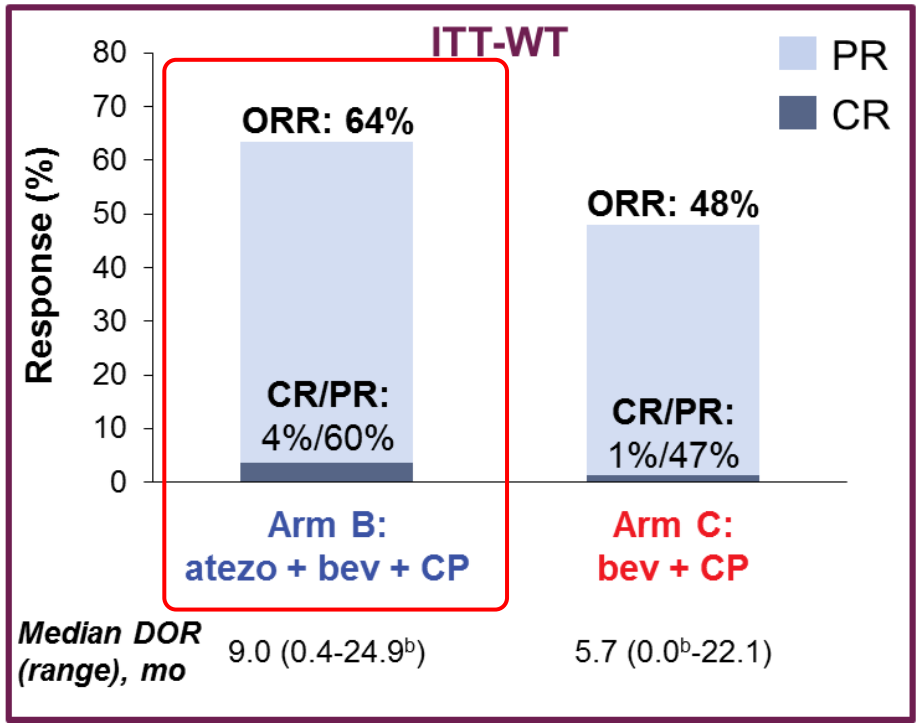


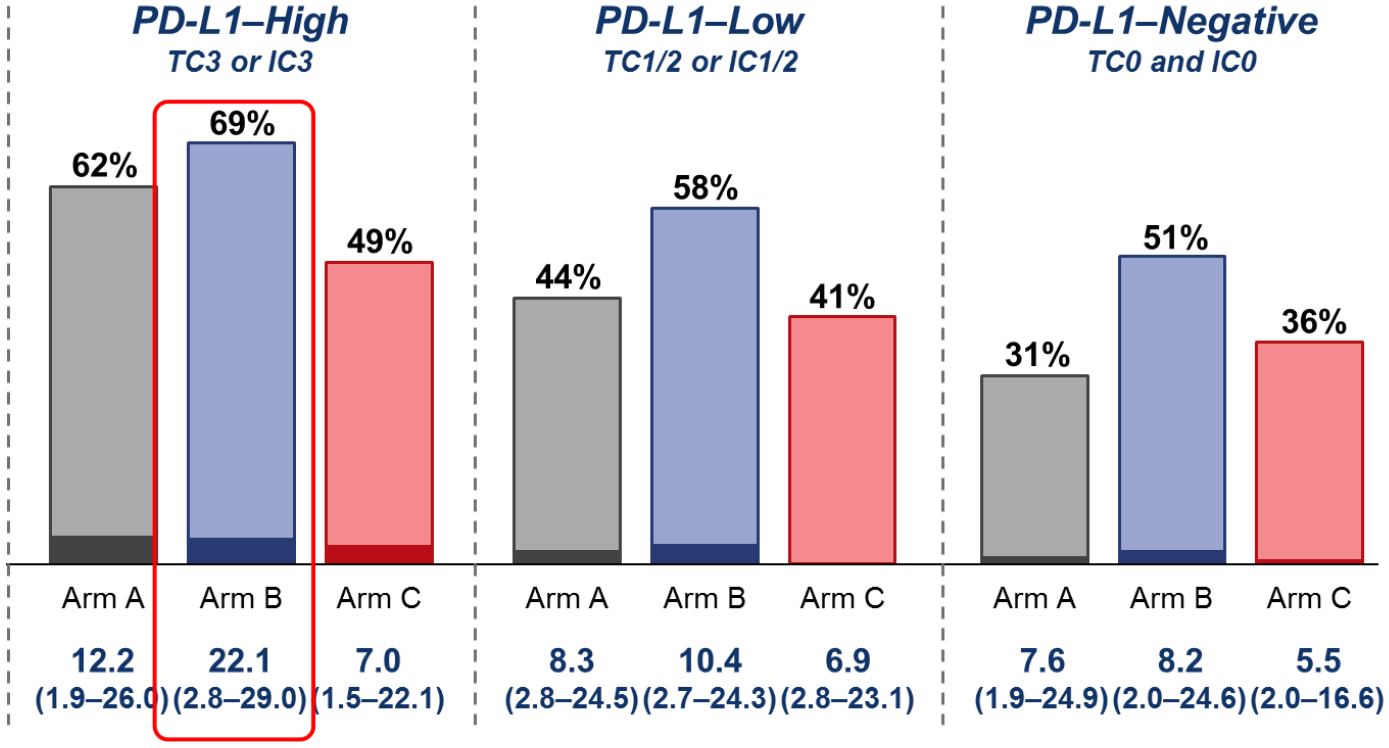


[a]ITT-WT population excluded patients with EGFR or ALK genetic alterations. [b]Stratified analysis.
cOS for Arm B vs C was considered final at the second interim analysis, updated data is for descriptive purposes only.

Socinski et al. NEJM 2018. Socinski et al. ASCO 2018 (9002)
Socinski et al. AACR 2020 (CT216)

Impower 150: Exceptional High Response Rate with Atezolizumab+Beva+Chemo





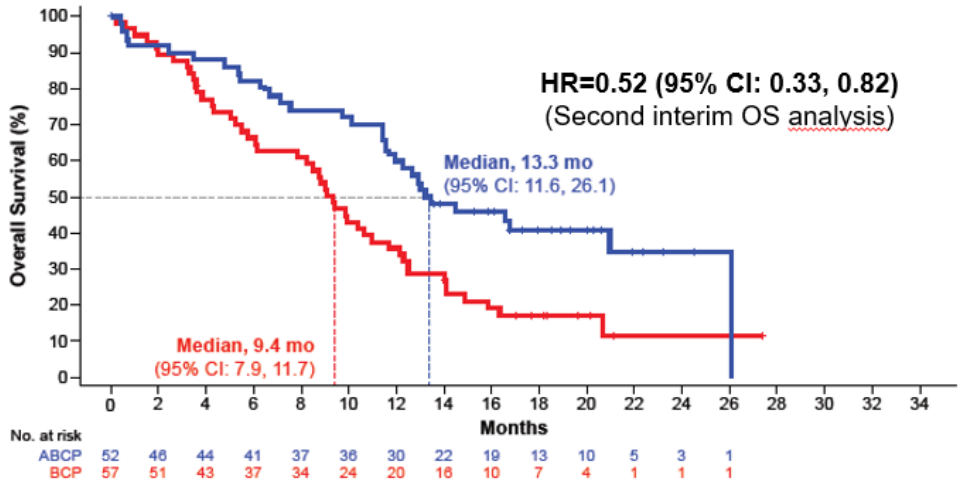
ReckM, et al. ESMO 2017
Mark A. Socinski et al, ASCO 2018

Efficacy in patients with baseline liver metastases

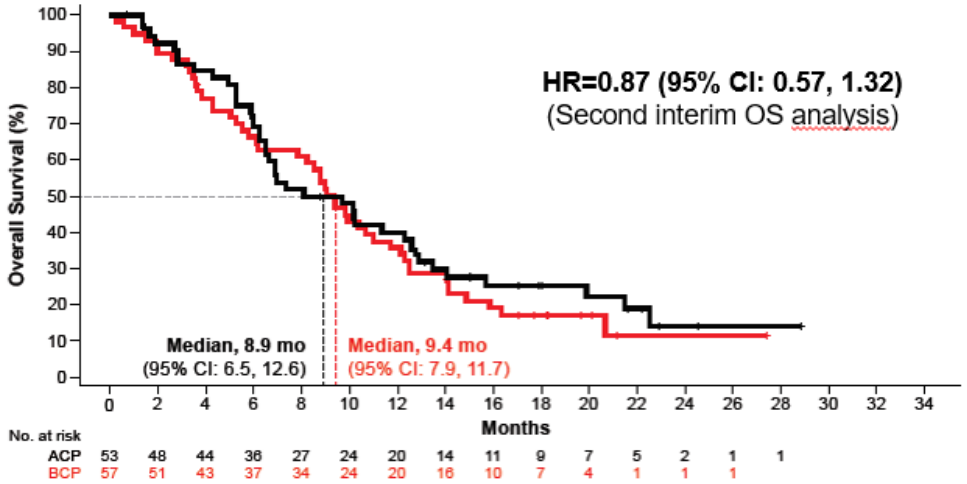
IMpower150: OS in patients with liver metastases

2019 ASCO

Arm B (atezo + bev + CP) vs Arm C (bev + CP)

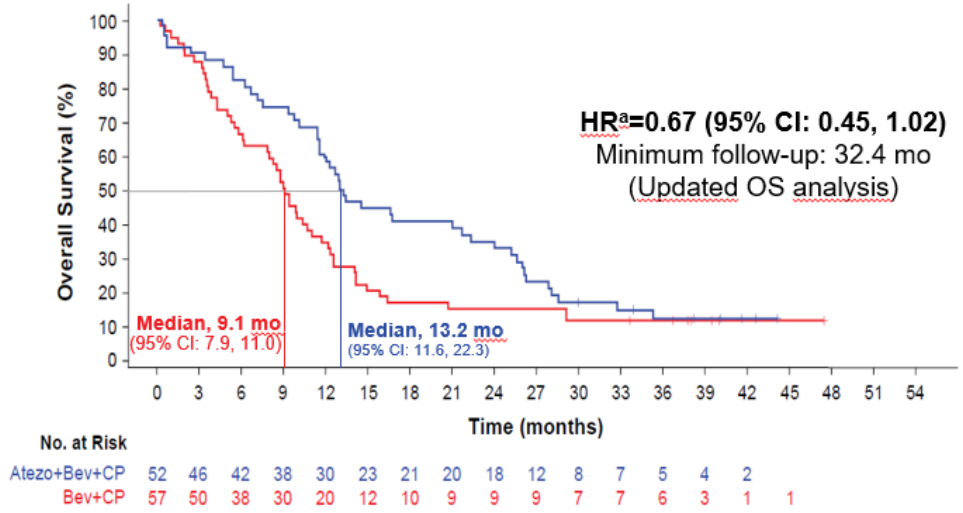


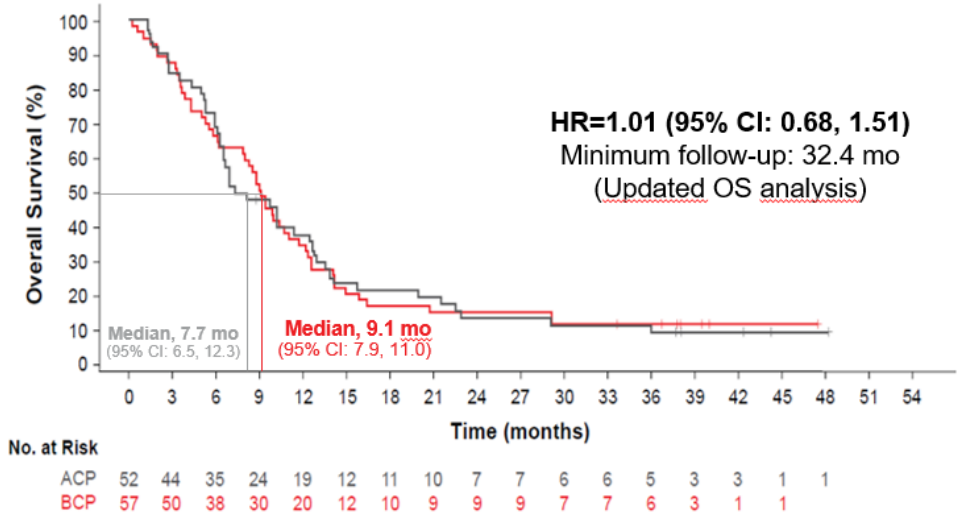
Arm A (atezo + CP) vs Arm C (bev + CP)



2020 AACR

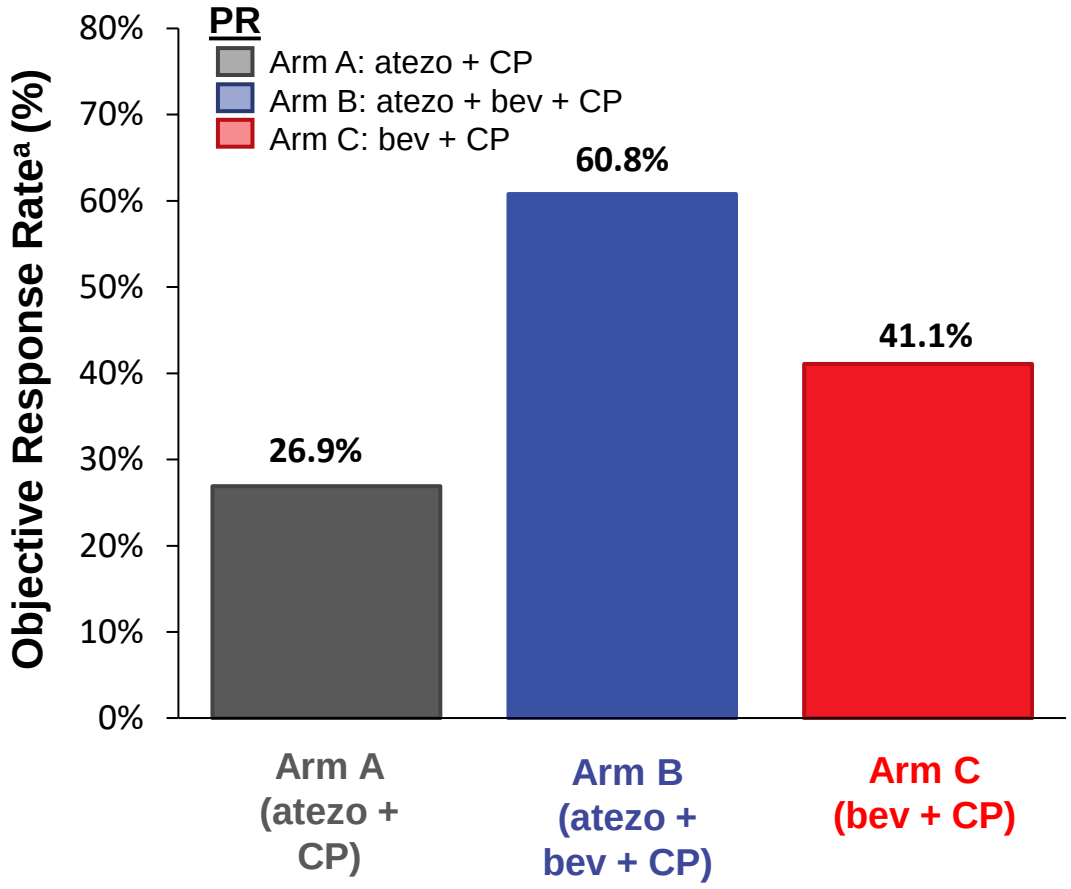
(F/U 39.8 mths)





Socinski et al. ASCO 2019 (9012). Reck et al. Lancet Respir Med 2019
Socinski et al. AACR 2020 (CT216)

IMpower150: Confirmed ORR and DOR in patients with liver metastases



	Arm A (atezo + CP)	Arm B (atezo + bev + CP)	Arm C (bev + CP)
Number of patients, n	52	51	56
ORR, n (%) (95% CI)	14 (26.9%) (15.6, 41.0)	31 (60.8%) (46.1, 74.2)	23 (41.1%) (28.1, 55.0)
CR	0	0	0
PR	14 (26.9%) (15.6, 41.0)	31 (60.8%) (46.1, 74.2)	23 (41.1%) (28.1, 55.0)
SD	21 (40.4%) (27.0, 54.9)	9 (17.6%) (8.4, 30.9)	16 (28.6%) (17.3, 42.2)
PD	11 (21.2%) (11.1, 34.7)	3 (5.9%) (1.2, 16.2)	10 (17.9%) (8.9, 30.4)
Median DOR, mo (95% CI)	5.6 (2.0, 19.0)	10.7 (2.8, 24.8)	4.6 (2.8, 22.1)
Ongoing responses at cut-off, n (%)	2 (14.0%)	8 (25.8%)	0

Data cut-off: 22 January, 2018.

[a]Objective response was defined as a confirmed complete response or partial response, as ascertained by the investigator according to RECIST, 1.1.

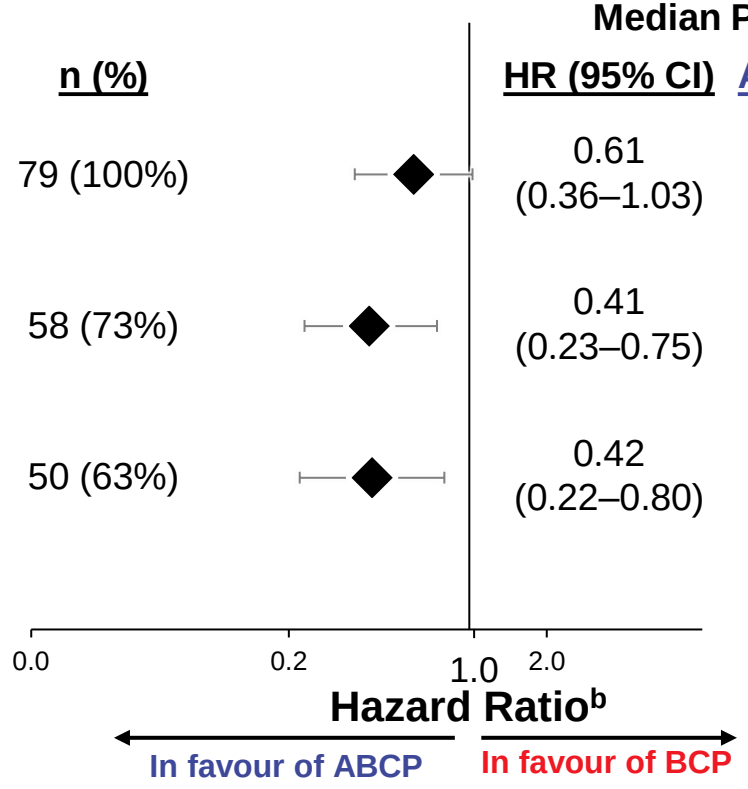
Reck et al. Lancet Respir Med 2019

Efficacy in patients with *EGFR+/ALK+* disease

IMpower150: investigator-assessed PFS in *EGFR*+ patient subgroups (updated PFS analysis)

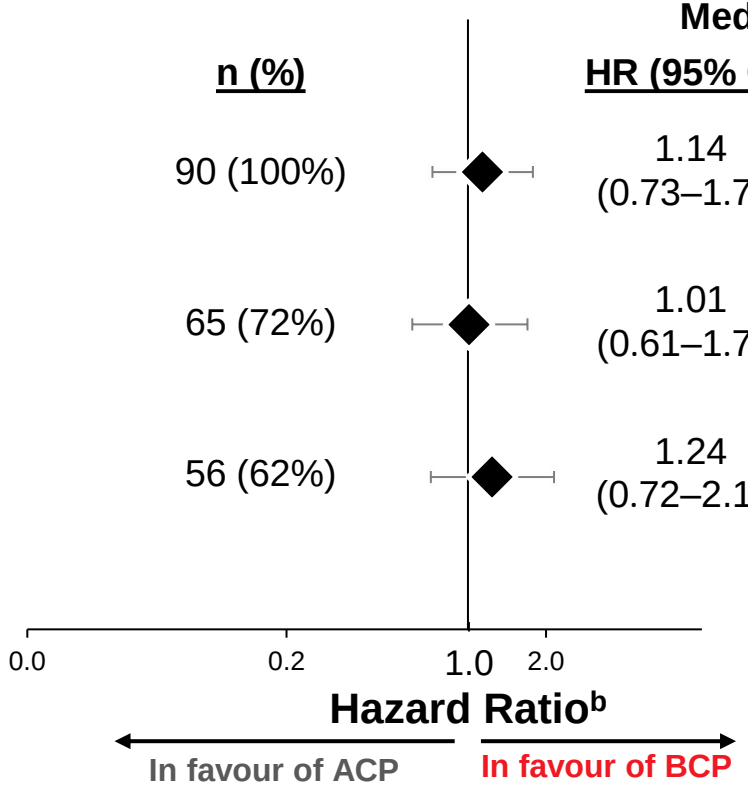
Arm B (atezo + bev + CP) ***vs*** ***Arm C (bev + CP)***

Subgroup	n (%)	HR (95% CI)	Median PFS, mo ABCP	Median PFS, mo BCP
EGFR Mutation	79 (100%)	0.61 (0.36–1.03)	10.2	6.9
Sensitising *EGFR* Mutation[a]	58 (73%)	0.41 (0.23–0.75)	10.3	6.1
Received Prior TKI Therapy	50 (63%)	0.42 (0.22–0.80)	9.7	6.1



Arm A (atezo + CP) ***vs*** ***Arm C (bev + CP)***

n (%)	HR (95% CI)	Median PFS, mo ACP	Median PFS, mo BCP
90 (100%)	1.14 (0.73–1.78)	6.9	6.9
65 (72%)	1.01 (0.61–1.70)	6.0	6.1
56 (62%)	1.24 (0.72–2.15)	5.7	6.1



The addition of atezolizumab to bevacizumab and chemotherapy showed a PFS benefit across *EGFR*-mutated patient subgroups, including those with sensitizing mutations and who have received prior TKI

Data cut-off: 22 January, 2018.

[a]Defined as exon 19 deletions or L858R mutations. [b]Unstratified HR.

Mok et al. ESMO Asia 2018 (LBA9)

IMpower150: OS in *EGFR*+ patient subgroups (second interim OS analysis)

Arm B (atezo + bev + CP)* vs *Arm C (bev + CP)

Subgroup	n (%)	Median OS, mo HR (95% CI)	ABCP	BCP
EGFR Mutation	79 (100%)	0.61 (0.29–1.28)	NE	18.7
Sensitising *EGFR* Mutation[a]	58 (73%)	0.31 (0.11–0.83)	NE	17.5
Received Prior TKI Therapy	50 (63%)	0.39 (0.14–1.07)	NE	17.5

Arm A (atezo + CP)* vs *Arm C (bev + CP)

n (%)	Median OS, mo HR (95% CI)	ACP	BCP
90 (100%)	0.93 (0.51–1.68)	21.4	18.7
65 (72%)	0.90 (0.47–1.74)	21.2	17.5
56 (62%)	1.05 (0.53–2.09)	14.0	17.5

The addition of atezolizumab to bevacizumab and chemotherapy showed an OS benefit across all *EGFR*-mutated patient subgroups

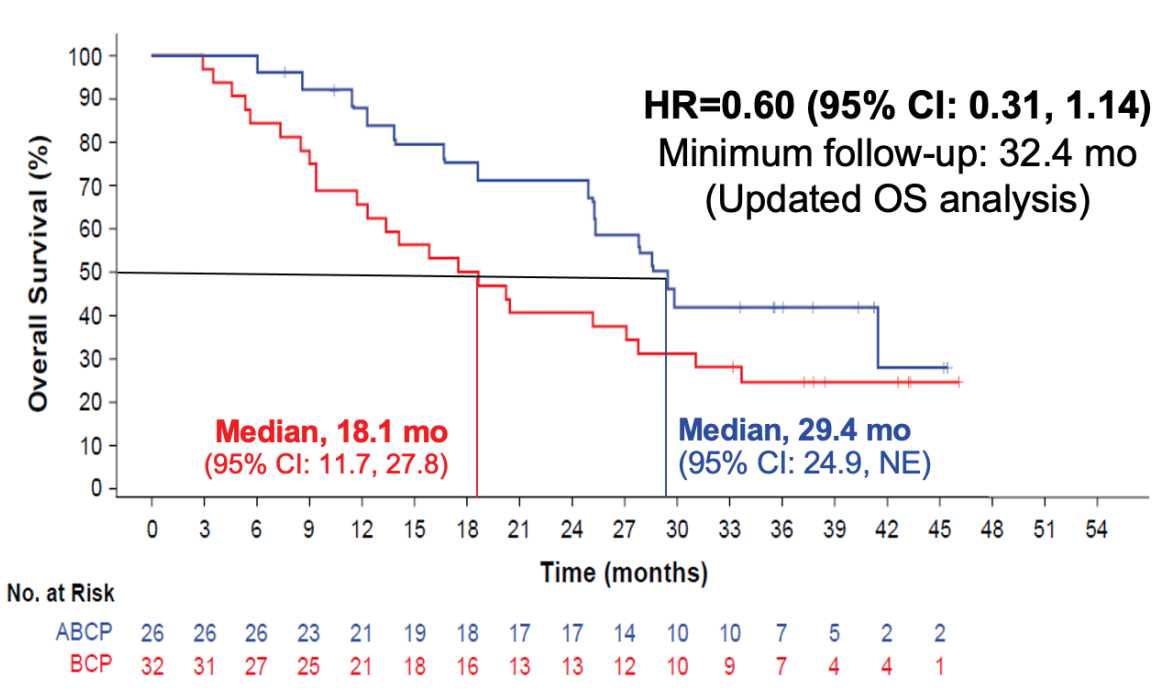
Data cut-off: 22 January, 2018.

[a]Defined as exon 19 deletions or L858R mutations. [b]Unstratified HR.

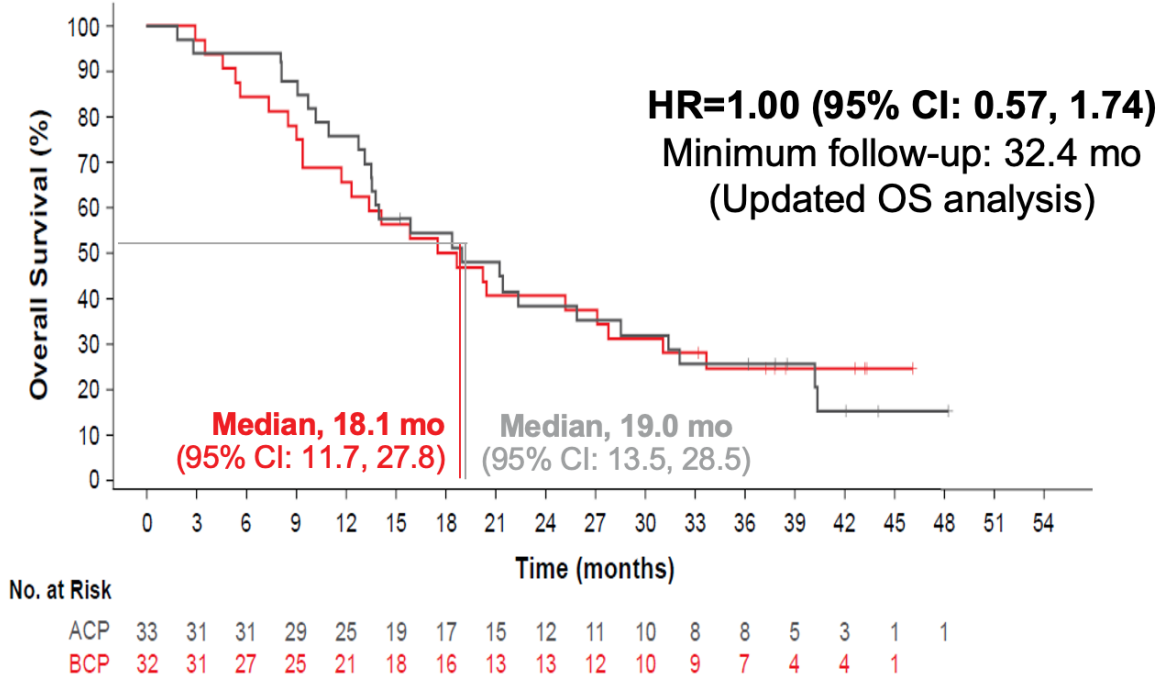
Mok et al. ESMO Asia 2018 (LBA9)

IMpower150: Updated OS in patients with sensitising *EGFR* mutations

Arm B (atezo + bev + CP) vs Arm C (bev + CP)



Arm A (atezo + CP) vs Arm C (bev + CP)



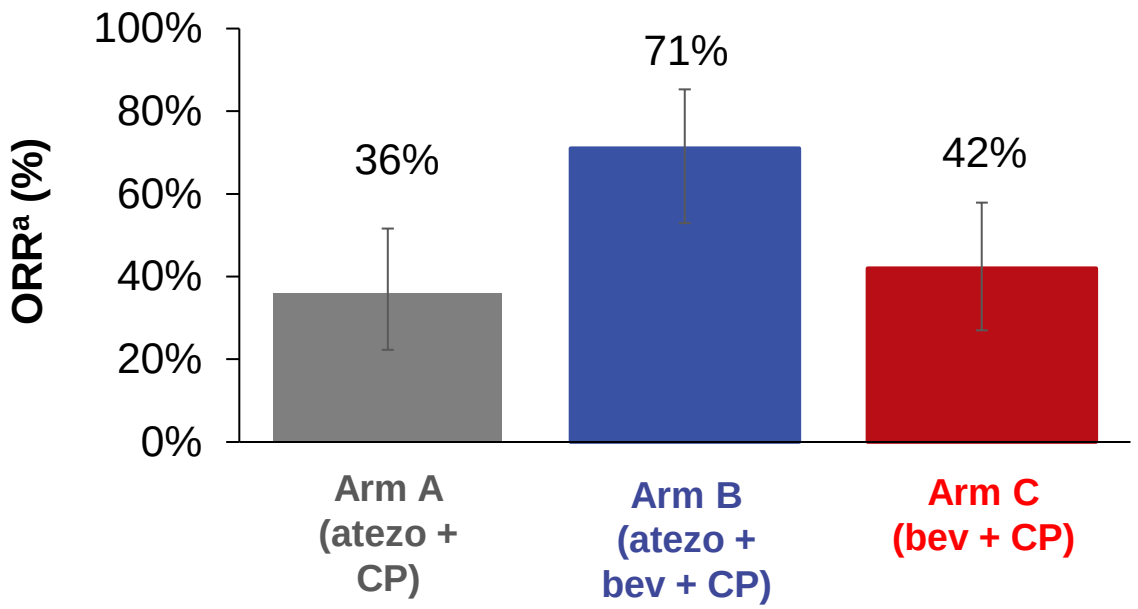
At this updated analysis with almost 20 months' longer follow-up, in the EGFR sensitising subgroup the median OS was reached for Arm B vs C, showing a continued clear separation of curves and OS benefit with the addition of atezolizumab to bevacizumab + chemotherapy. No benefit was observed between Arm A vs C

Data cut-off: 13 September, 2019.

OS for Arm B versus C was considered final at the second interim analysis, updated data is for descriptive purposes only.

Socinski et al. AACR 2020 (CT216)

IMpower150: ORR in patients with *EGFR*+ NSCLC (second interim OS analysis)



	Arm A (atezo + CP)	Arm B (atezo + bev + CP)	Arm C (bev + CP)
Number of patients, n	45	34	43
ORR, n (%) (95% CI)	16 (35.6) (21.9, 51.2)	24 (70.6) (52.5, 84.9)	18 (41.9) (27.0, 57.9)
CR	1 (2.2) (0.1–11.8)	2 (5.9) (0.7–19.7)	0
PR	15 (33.3) (20.0, 49.0)	22 (64.7) (46.5, 80.3)	18 (41.9) (27.0, 57.9)
SD	21 (46.7) (31.7, 62.1)	5 (14.7) (5.0, 31.1)	19 (44.2) (29.1, 60.1)
PD	6 (13.3) (5.1, 26.8)	2 (5.9) (0.7, 19.7)	3 (7.0) (1.5, 19.1)
Median DOR, mo (95% CI)	5.6 (2.6, 15.2)	11.1 (2.8, 18.0)	4.7 (2.6, 13.5)
Ongoing responses at cut-off, n (%)	3 (18.8)	9 (37.5)	0

Data cut-off: 22 January, 2018.

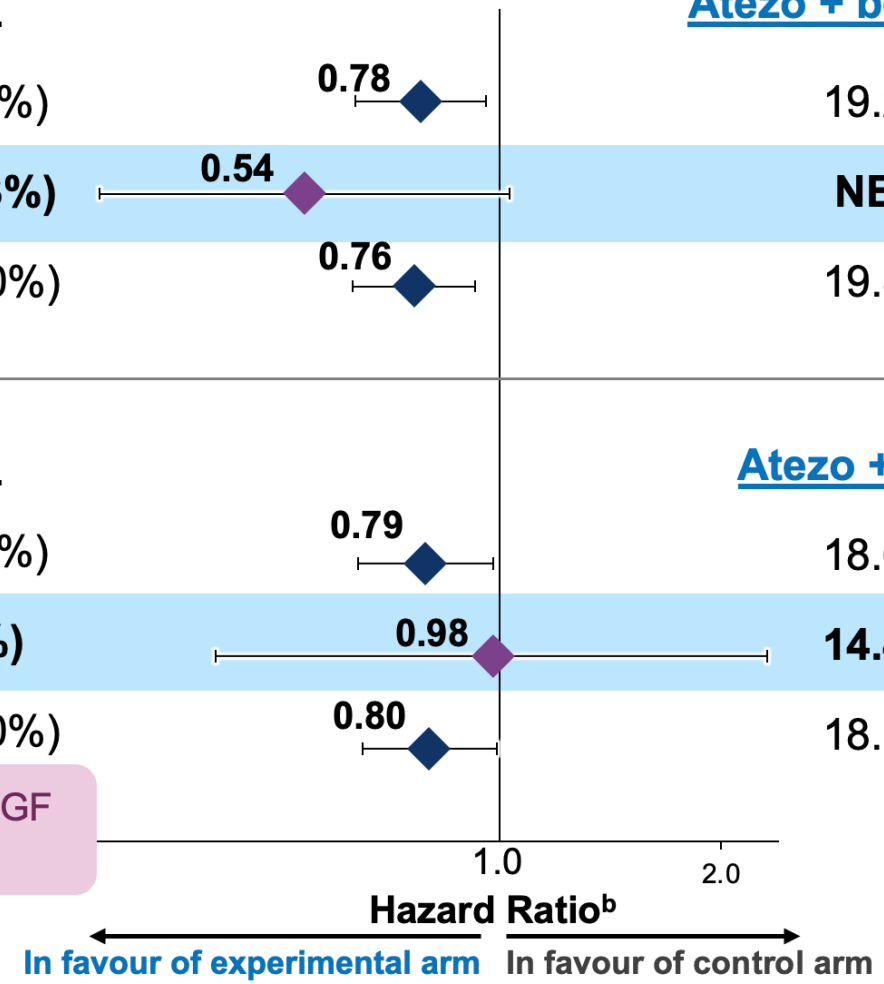
[a]Responses are confirmed. Includes patients with measurable disease. Missing or unevaluable in the *EGFR*-positive subgroup: three patients in the ABCP group, two patients in the ACP group, and three patients in the BCP group. One patient in the BCP group had a non-complete response or non-progressive disease response.

Mok et al. ESMO Asia 2018 (LBA9)
Reck et al. Lancet Respir Med 2019

EGFR+/*ALK*+ subgroup data from other first-line atezolizumab trials in NSCLC

	Subgroup	n (%)	Median OS, mo: Atezo + bev + CP	Median OS, mo: Bev + CP
IMpower150[1]	ITT-WT	696 (87%)	19.2	14.7
IMpower150[1]	***EGFR*+/*ALK*+ only**	**104[a] (13%)**	**NE**	**17.5**
IMpower150[1]	ITT (including *EGFR*+/*ALK*+)	800 (100%)	19.8	14.9

	Subgroup	n (%)	Atezo + CnP	CnP
IMpower130[2]	ITT-WT	679 (94%)	18.6	13.9
IMpower130[2]	***EGFR*+/*ALK*+ only**	**44 (6%)**	**14.4**	**10.0**
IMpower130[2]	ITT (including *EGFR*+/*ALK*+)	723 (100%)	18.1	13.9



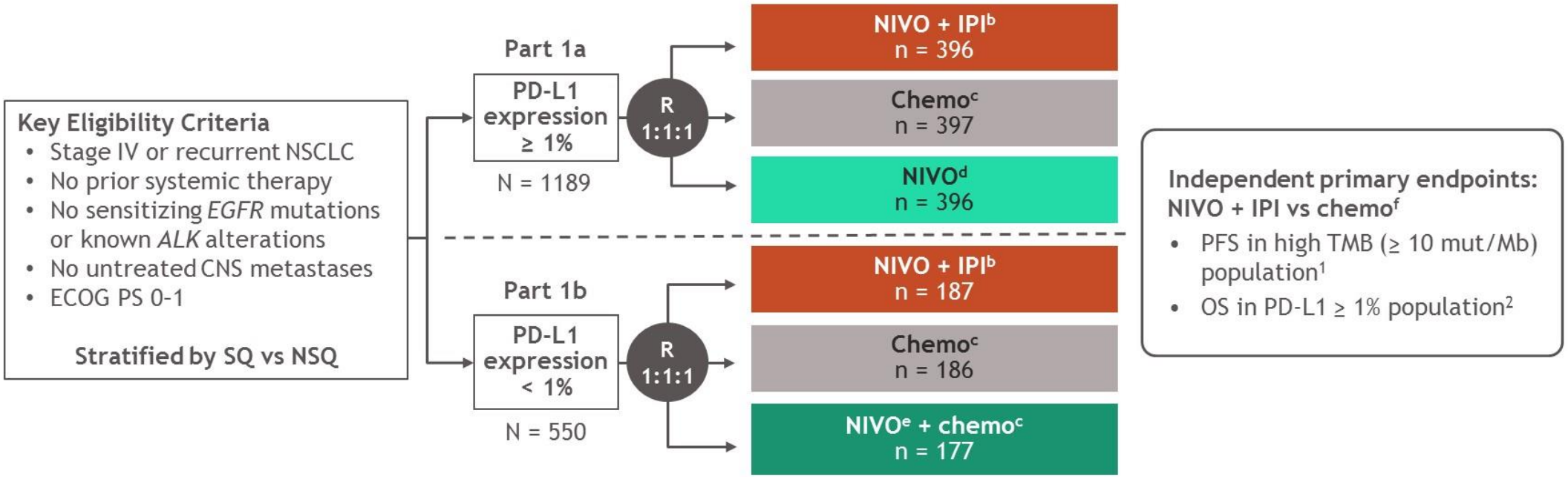
Analyses from IMpower130 further supports the role of anti-VEGF therapy and CIT in patients with *EGFR*+/*ALK*+ NSCLC

Data cut-off for IMpower150: 22 January, 2018.
Data cut-off for IMpower130: 15 March, 2018.
[a]One patient had *EGFR* exon 19 deletion and also tested *ALK* positive per central lab. [b]Stratified HR for ITT populations, unstratified HRs for subgroups.

Socinski et al. ASCO 2018 (9002); Cappuzzo et al. ESMO 2018 (LBA53)

Immunotherapy Combo

CheckMate 227[a] Part 1 study design

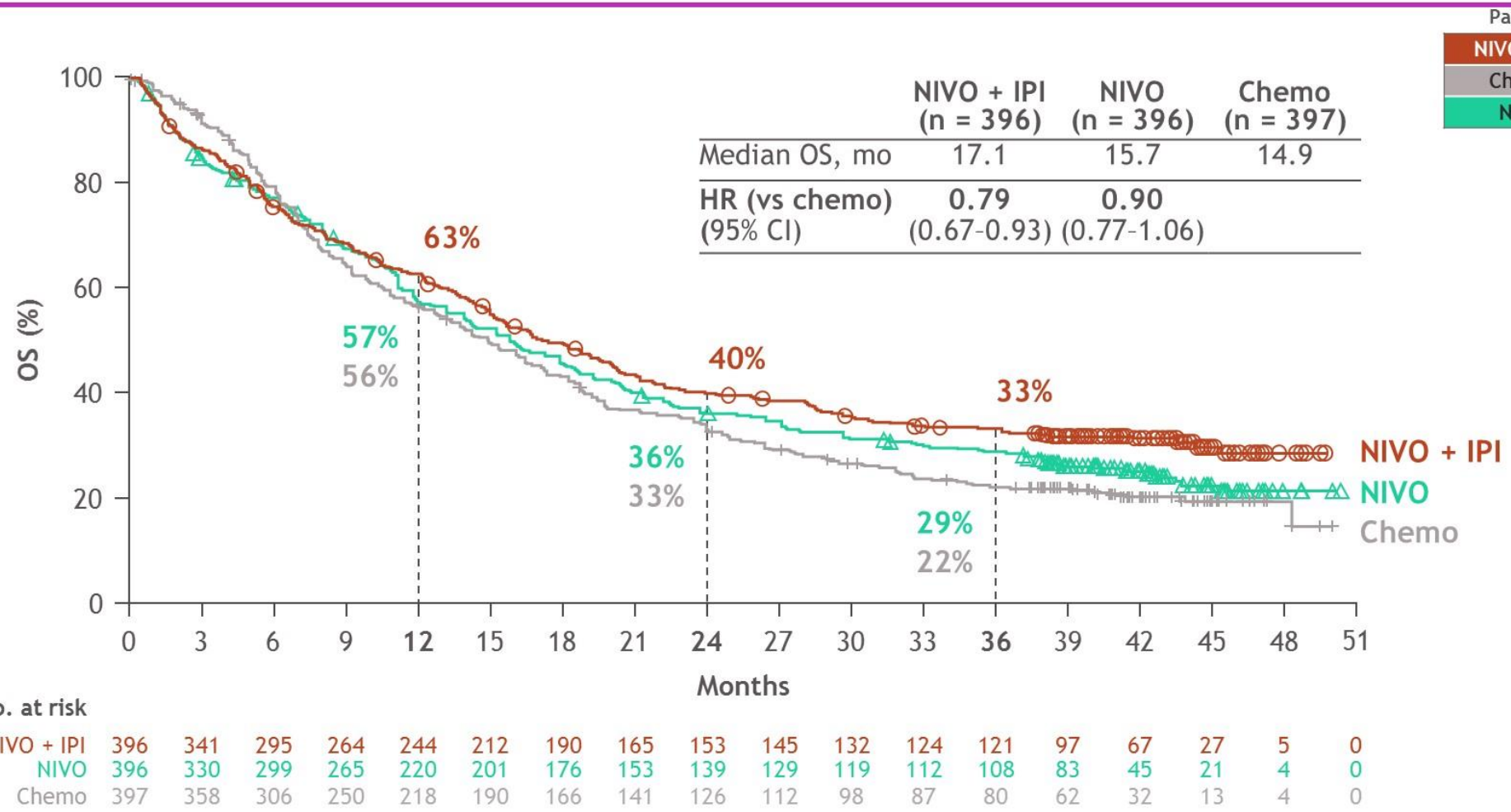


Database lock: February 28, 2020; minimum / median follow-up for OS: 37.7 months / 43.1 months.

Treatment was continued until disease progression, unacceptable toxicity, or for 2 years for immunotherapy; [a]NCT02477826; [b]NIVO (3 mg/kg Q2W) + IPI (1 mg/kg Q6W); [c]NSQ: pemetrexed + cisplatin or carboplatin, Q3W for ≤ 4 cycles, with optional pemetrexed maintenance following chemo or NIVO + pemetrexed maintenance following NIVO + chemo; SQ: gemcitabine + cisplatin, or gemcitabine + carboplatin, Q3W for ≤ 4 cycles; [d]NIVO (240 mg Q2W); [e]NIVO (360 mg Q3W); [f]Both endpoints were met; results were previously reported.

1. Hellmann MD, et al. *N Engl J Med* 2018;378(22):2093-2104; 2. Hellmann MD, et al. *N Engl J Med* 2019;381(21):2020-2031.

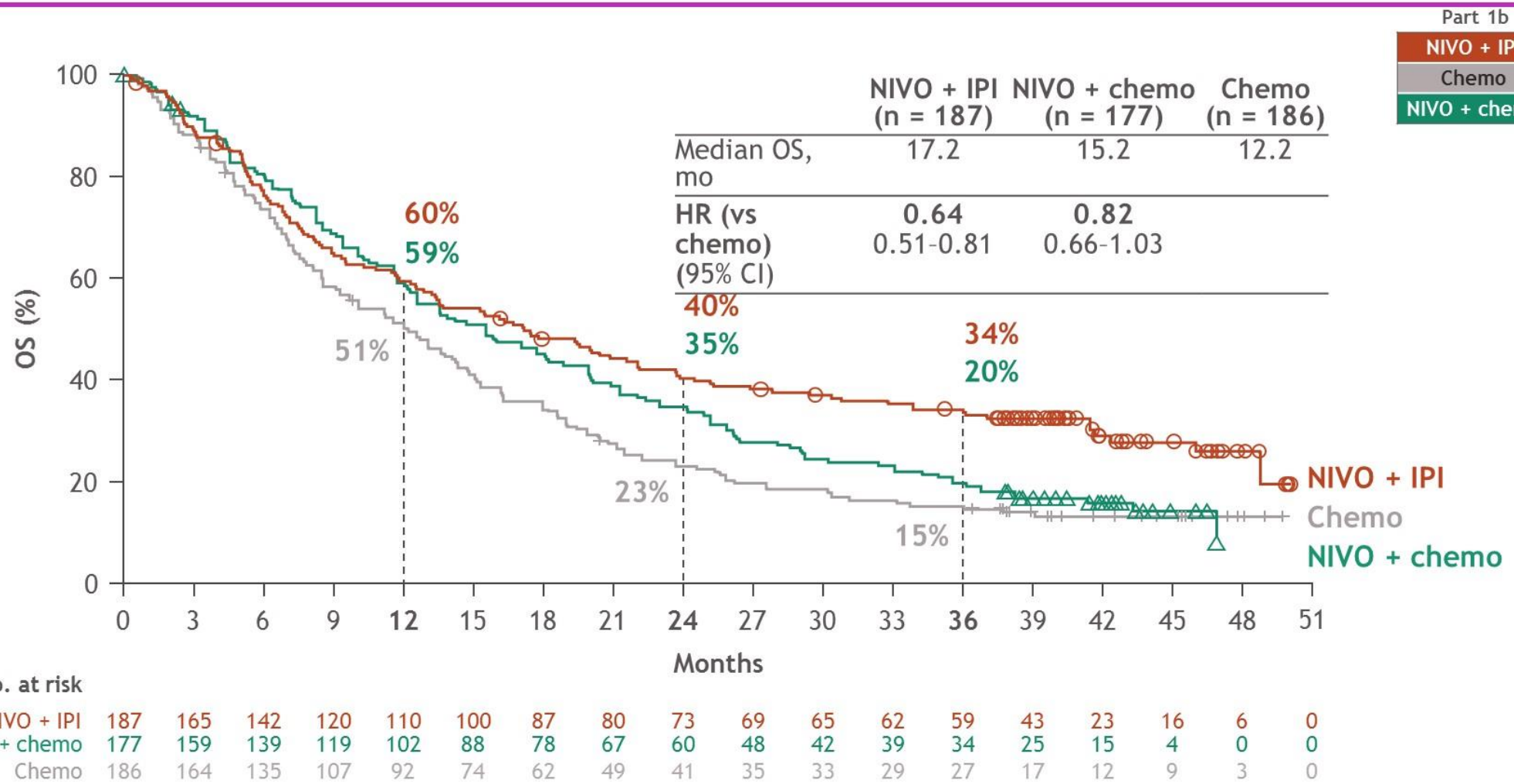
3-year update: OS with NIVO + IPI vs chemo vs NIVO (PD-L1 ≥ 1%)



Database lock: February 28, 2020; minimum follow-up for OS: 37.7 months.

Dosages were NIVO (3 mg/kg Q2W) + IPI (1 mg/kg Q6W) and NIVO (240 mg Q2W). Among patients who were alive at 3 years, subsequent systemic therapy was received by 35% in the NIVO + IPI arm, 45% in the NIVO arm, and 76% in the chemo arm; subsequent immunotherapies were received by 13%, 21%, and 71%; and subsequent chemotherapy was received by 28%, 33% and 30%, respectively.

3-year update: OS with NIVO + IPI vs Chemo vs NIVO + Chemo (PD-L1 < 1%)



Database lock: February 28, 2020; minimum follow-up for OS: 37.7 months.

Dosages were NIVO (3 mg/kg Q2W) + IPI (1 mg/kg Q6W), and NIVO (360 mg Q3W) plus chemo. Among patients who were alive at 3 years, subsequent systemic therapy was received by 49% in the NIVO + IPI arm, 38% in the NIVO + chemo arm, and 78% in the chemo arm; subsequent immunotherapies were received by 12%, 12%, and 74%; and subsequent chemotherapy was received by 46%, 35% and 33%, respectively.

Safety summary: NIVO + IPI, chemo, NIVO, NIVO + chemo

TRAE,[a] %	All randomized (PD-L1 ≥ 1% and PD-L1 < 1%)				PD-L1 ≥ 1%		PD-L1 < 1%	
	NIVO + IPI (n = 576)		Chemo (n = 570)		NIVO (n = 391)		NIVO + chemo (n = 172)	
	Any grade	Grade 3-4	Any grade	Grade 3-4	Any grade	Grade 3-4	Any grade	Grade 3-4
Any TRAE	77	33	82	36	66	20	92	56
TRAEs leading to discontinuation of any component of the regimen	18	12	9	5	12	7	14	8
Treatment-related deaths[b]	1		1		< 1		2	

- With a minimum safety follow-up of 36.3 months, safety was consistent with the previous reports[1,2]

Database lock: February 28, 2020. Dosages were NIVO (3 mg/kg Q2W) + IPI (1 mg/kg Q6W), NIVO (240 mg Q2W), and NIVO (360 mg Q3W) plus chemo. Maximum treatment duration for immunotherapy was 2 years.

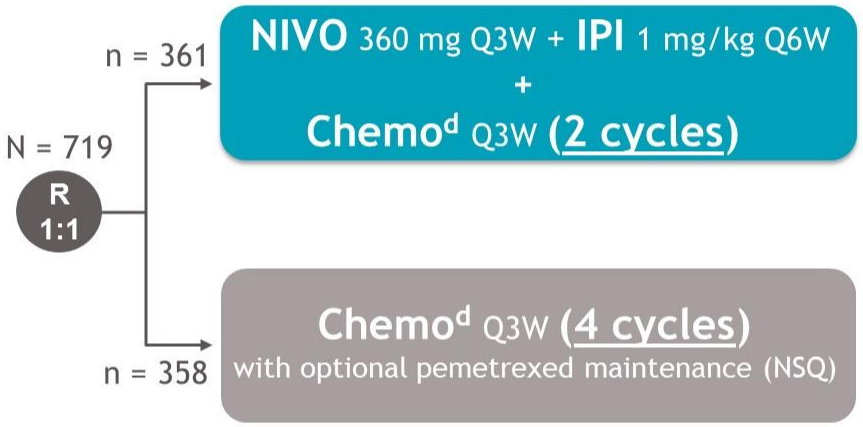
[a]Includes events reported between first dose and 30 days after last dose of study drug; [b]Treatment-related deaths in the NIVO + IPI arm (n = 8) were: pneumonitis (n = 4), shock, myocarditis, acute tubular necrosis, and cardiac tamponade (n = 1 each); deaths in the chemo arm (n = 6) were: sepsis (n = 2), febrile neutropenia with sepsis, multiple brain infarctions, interstitial lung disease, and thrombocytopenia (n = 1 each); deaths in the NIVO arm (n = 2) were: pneumonitis, and critical neutropenia with sepsis (n = 1 each); deaths in the NIVO + chemo arm (n = 4) were: hypovolemic shock, pulmonary embolism, respiratory failure, and pancytopenia (n = 1 each).

1. Hellmann MD, et al. *N Engl J Med* 2019;381(21):2020-2031; 2. Hellmann MD, et al. *N Engl J Med* 2018;378(22):2093-2104.

CheckMate 9LA study design[a]

Key Eligibility Criteria
- Stage IV or recurrent NSCLC
- No prior systemic therapy
- No sensitizing *EGFR* mutations or known *ALK* alterations
- ECOG PS 0-1

Stratified by PD-L1[b] (< 1%[c] vs ≥ 1%), sex, and histology (SQ vs NSQ)



Until disease progression, unacceptable toxicity, *or* for 2 years for immunotherapy

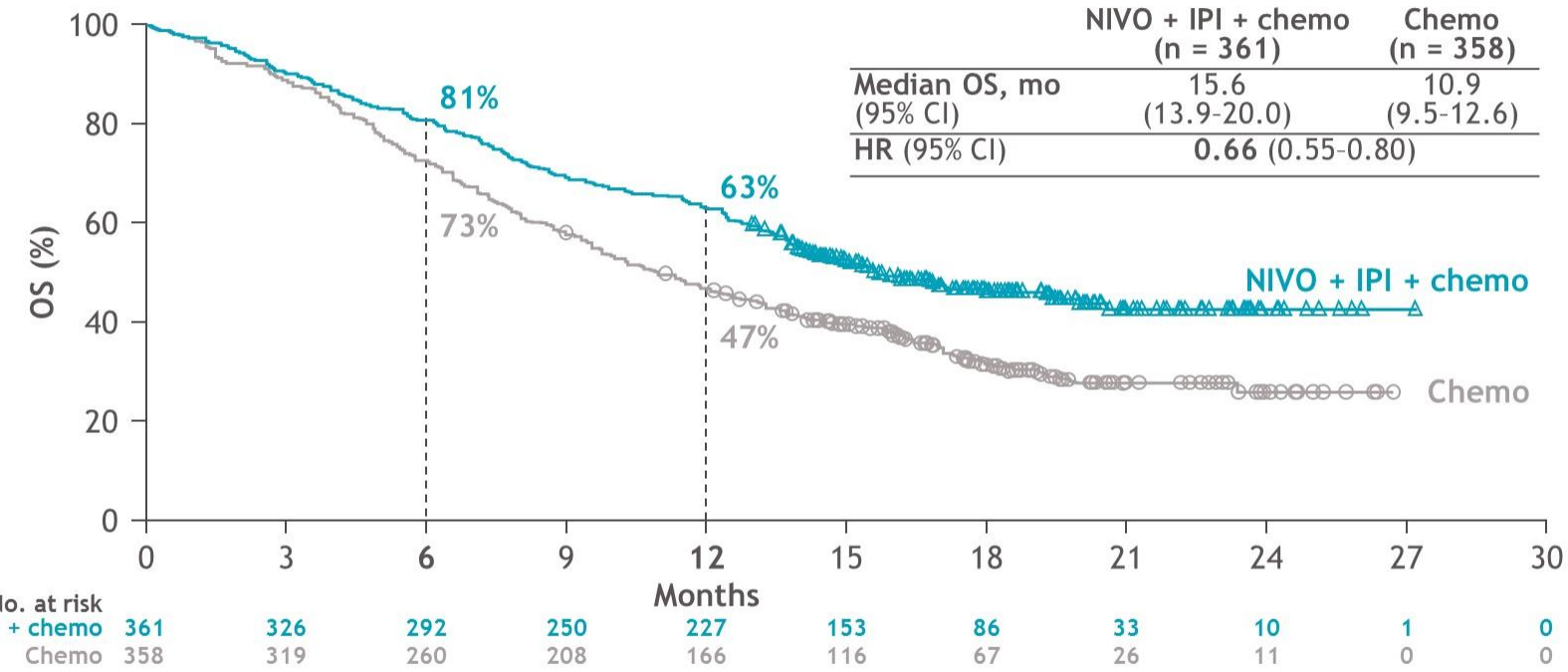
Primary endpoint
- OS

Secondary endpoints
- PFS by BICR[e]
- ORR by BICR[e]
- Efficacy by tumor PD-L1 expression

Interim database lock: October 3, 2019; minimum follow-up: 8.1 months for OS and 6.5 months for all other endpoints.
Updated database lock: March 9, 2020; minimum follow-up: 12.7 months for OS and 12.2 months for all other endpoints.

[a]NCT03215706; [b]Determined by the PD-L1 IHC 28-8 pharmDx assay (Dako); [c]Patients unevaluable for PD-L1 were stratified to PD-L1 < 1% and capped to 10% of all randomized patients; [d]**NSQ**: pemetrexed + cisplatin or carboplatin; SQ: paclitaxel + carboplatin; [e]Hierarchically statistically tested.

Primary endpoint (updated): Overall survival[a]

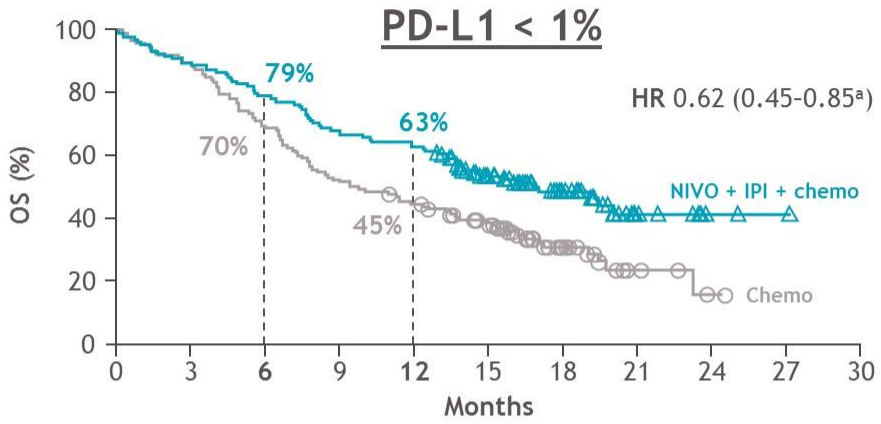


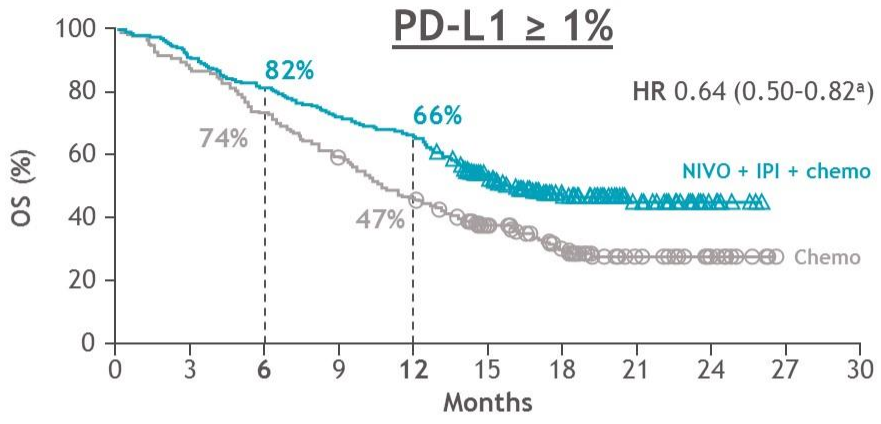
	NIVO + IPI + chemo (n = 361)	Chemo (n = 358)
Median OS, mo (95% CI)	15.6 (13.9-20.0)	10.9 (9.5-12.6)
HR (95% CI)	**0.66** (0.55-0.80)	

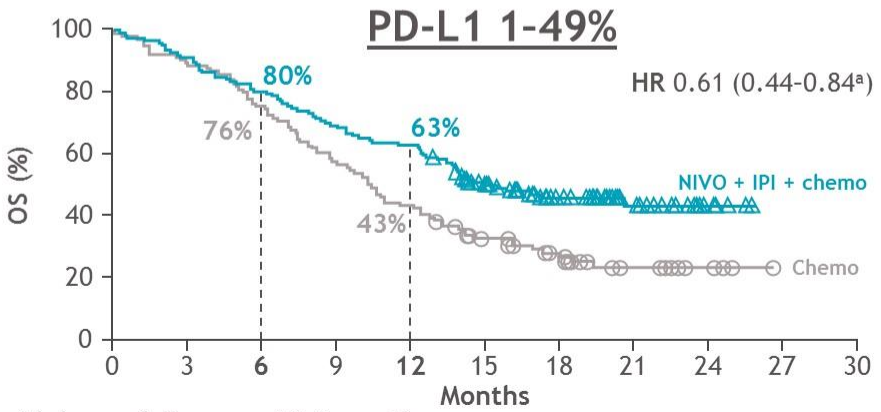
Minimum follow-up: 12.7 months.

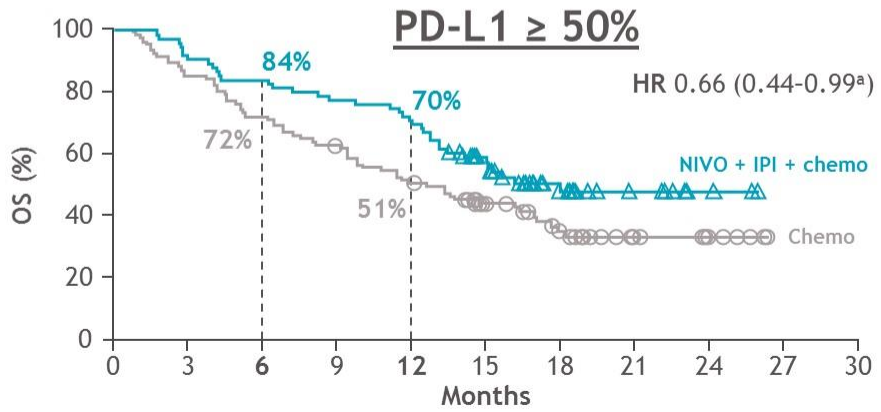
[a]Patients remaining in follow-up were censored on the last date they were known to be alive; 47% of patients in the NIVO + IPI + chemo arm and 32% of patients in the chemo arm were censored. Subsequent systemic therapy was received by 31% of patients in the NIVO + IPI + chemo arm and 40% in the chemo arm; subsequent immunotherapy was received by 5% and 30%, and subsequent chemotherapy by 29% and 22%, respectively. Among patients with BICR-confirmed disease progression on study, subsequent systemic therapy was received by 40% in the NIVO + IPI + chemo arm and 44% in the chemo arm; subsequent immunotherapy was received by 7% and 34%, and subsequent chemotherapy by 38% and 24%, respectively

Overall survival by PD-L1 expression level









Minimum follow-up: 12.7 months.

[a]95% CI.

Pembrolizumab Plus Ipilimumab vs Pembrolizumab Plus Placebo as 1L Therapy For Metastatic NSCLC of PD-L1 TPS ≥50%: KEYNOTE-598

Michael Boyer,[1] Mehmet A.N. Şendur,[2] Delvys Rodríguez-Abreu,[3] Keunchil Park,[4] Dae Ho Lee,[5] Irfan Çiçin,[6] Perran Fulden Yumuk,[7] Francisco J. Orlandi,[8] Ticiana A. Leal,[9] Olivier Molinier,[10] Nopadol Soparattanapaisam,[11] Adrian Langleben,[12] Raffaele Califano,[13] Balazs Medgyasszay,[14] Te-Chun Hsia,[15] Gregory A. Otterson,[16] Lu Xu,[17] Bilal Piperdi,[17] Ayman Samkari,[17] Martin Reck[18]

[1]Chris O'Brien Lifehouse, Camperdown, NSW, Australia; [2]Ankara Yıldırım Beyazıt University, Faculty of Medicine and Ankara City Hospital, Ankara, Turkey [3]Complejo Hospitalario Universitario Insular Materno-Infantil de Gran Canaria, Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain; [4]Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, South Korea; [5]Asan Medical Center, Seoul, South Korea; [6]Trakya University, Erdine, Turkey; [7]Marmara University School of Medicine, Istanbul, Turkey; [8]Orlandi-Oncología, Providencia, Chile; [9]University of Wisconsin Carbone Cancer Center, Madison, WI, USA; [10]Hospital of Le Mans, Le Mans, France; [11]Mahidol University, Sriraj Hospital, Bangkok, Thailand; [12]St. Mary's Hospital – ODIM, McGill University Department of Oncology, Montreal, QC, Canada; [13]The Christie NHS Foundation Trust, and Division of Cancer Sciences, The University of Manchester, Manchester, UK; [14]Veszprém Megyei Tüdőgyógyintézet Farkasgyepű, Farkasgyepű, Hungary; [15]China Medical University and China Medical University Hospital, Taichung, Taiwan; [16]The Ohio State University-James Comprehensive Cancer Center, Columbus, OH, USA; [17]Merck & Co., Inc., Kenilworth, NJ, USA; [18]LungenClinic, Airway Research Center North, German Center for Lung Research, Grosshansdorf, Germany

KEYNOTE-598 Study Design

Key Eligibility Criteria

- Stage IV NSCLC
- No prior systemic therapy
- ECOG PS 0 or 1
- PD-L1 TPS ≥50%[a]
- No targetable *EGFR* mutations or *ALK* translocations[b]
- No known untreated CNS metastases
- ≥1 lesion measurable per RECIST v1.1

R (1:1)

Pembrolizumab 200 mg Q3W for up to 35 doses
+
Ipilimumab 1 mg/kg Q6W for up to 18 doses

Pembrolizumab 200 mg Q3W for up to 35 doses
+
Saline Placebo Q6W for up to 18 doses

Stratification Factors

- ECOG PS (0 vs 1)
- Region (East Asia vs not East Asia)
- Histology (squamous vs nonsquamous)

End Points

- **Dual primary:** OS and PFS per RECIST v1.1 by BICR
- **Key secondary:** ORR and DOR per RECIST v1.1 by BICR and safety

[a]Assessed centrally using the PD-L1 IHC 22C3 pharmDx assay (Agilent).
[b]Patients with *ROS1* rearrangement were also excluded if *ROS1* testing and treatment were locally approved and accessible.
KEYNOTE-598 ClinicalTrials.gov identifier, NCT03302234. BICR, blinded independent central review.

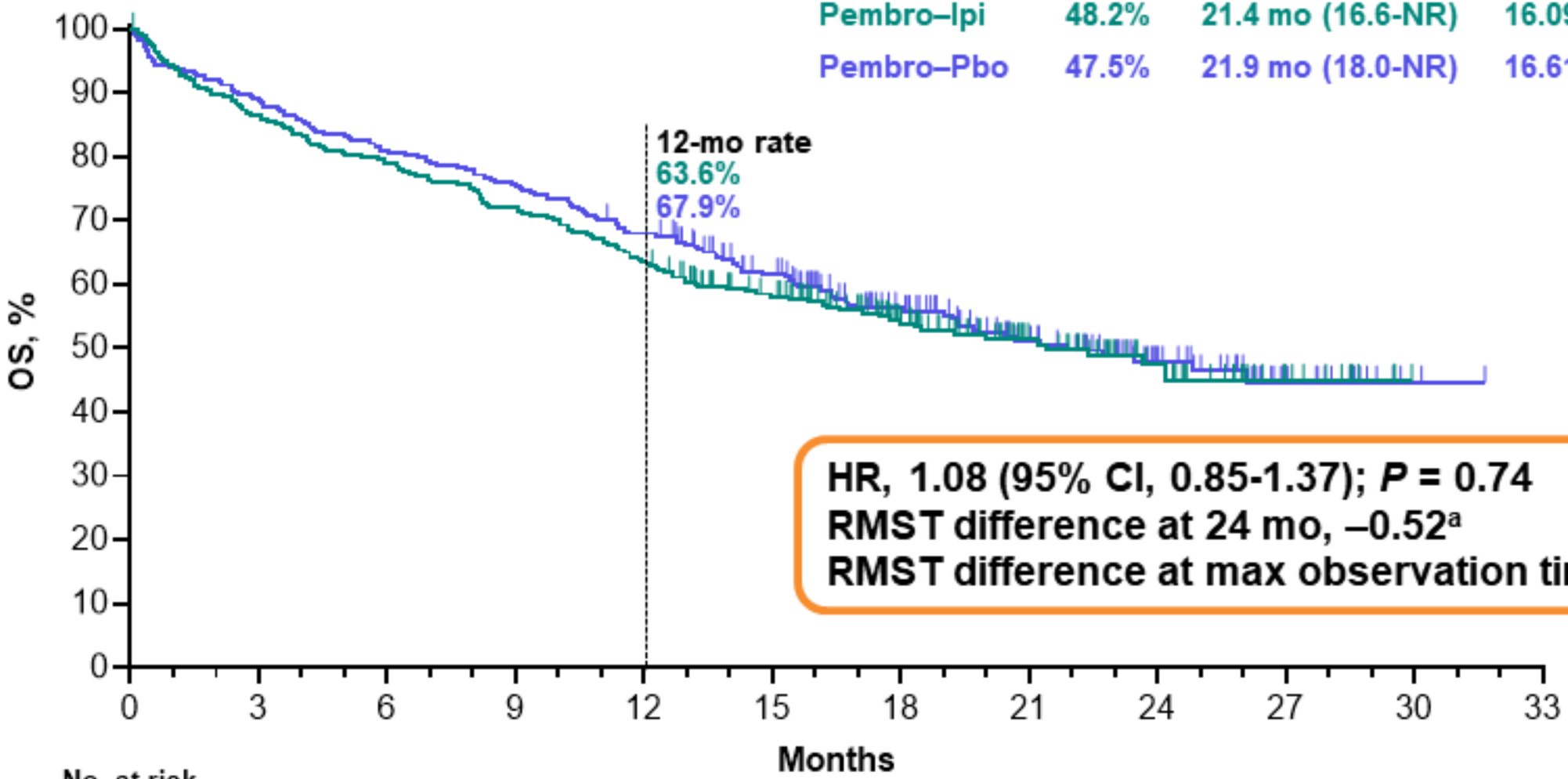
Baseline Characteristics

	Pembrolizumab–Ipilimumab (N = 284)	Pembrolizumab–Placebo (N = 284)
Age, median (range), years	64 (35-85)	65 (35-85)
Men	202 (71.1%)	191 (67.3%)
Enrolled in East Asia	32 (11.3%)	31 (10.9%)
ECOG PS 1	183 (64.4%)	180 (63.4%)
Former/current smoker	255 (89.8%)	259 (91.2%)
Histology		
Squamous	77 (27.1%)	81 (28.5%)
Nonsquamous	207 (72.9%)	203 (71.5%)
Brain metastases	31 (10.9%)	29 (10.2%)

Data cutoff date: Sep 1, 2020.

Overall Survival

	Pts w/ Event	Median (95% CI)	RMST at 24 mo	RMST at Max Time
Pembro–Ipi	48.2%	21.4 mo (16.6-NR)	16.09 mo	18.76 mo
Pembro–Pbo	47.5%	21.9 mo (18.0-NR)	16.61 mo	19.32 mo



HR, 1.08 (95% CI, 0.85-1.37); *P* = 0.74
RMST difference at 24 mo, –0.52[a]
RMST difference at max observation time, –0.56[a]

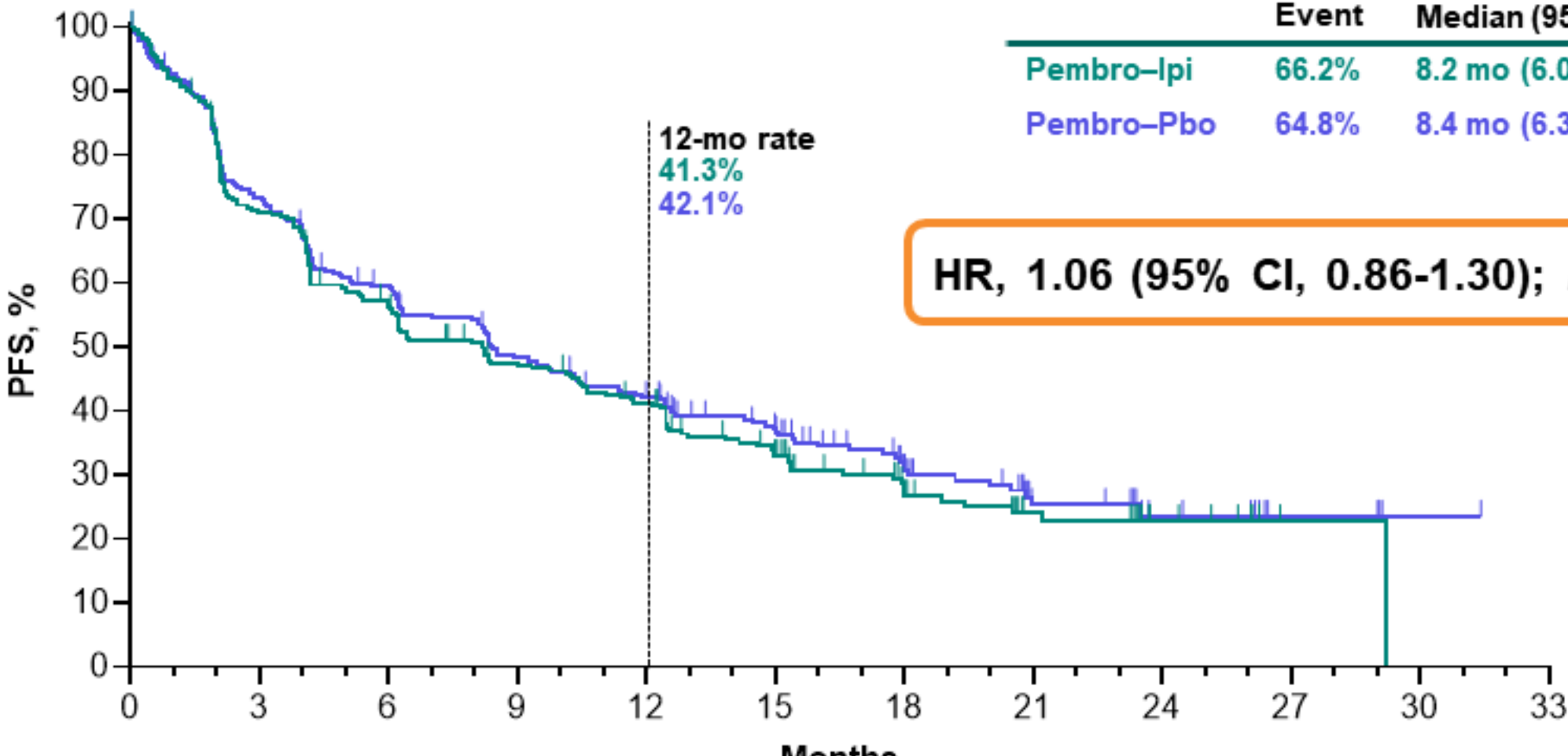
No. at risk

284	245	223	204	180	146	100	62	37	10	0	0
284	252	230	215	192	154	111	77	41	15	2	0

[a]Nonbinding futility criteria met.
Data cutoff date: Sep 1, 2020.

Progression-Free Survival

	Pts w/ Event	Median (95% CI)
Pembro–Ipi	66.2%	8.2 mo (6.0-10.5)
Pembro–Pbo	64.8%	8.4 mo (6.3-10.5)

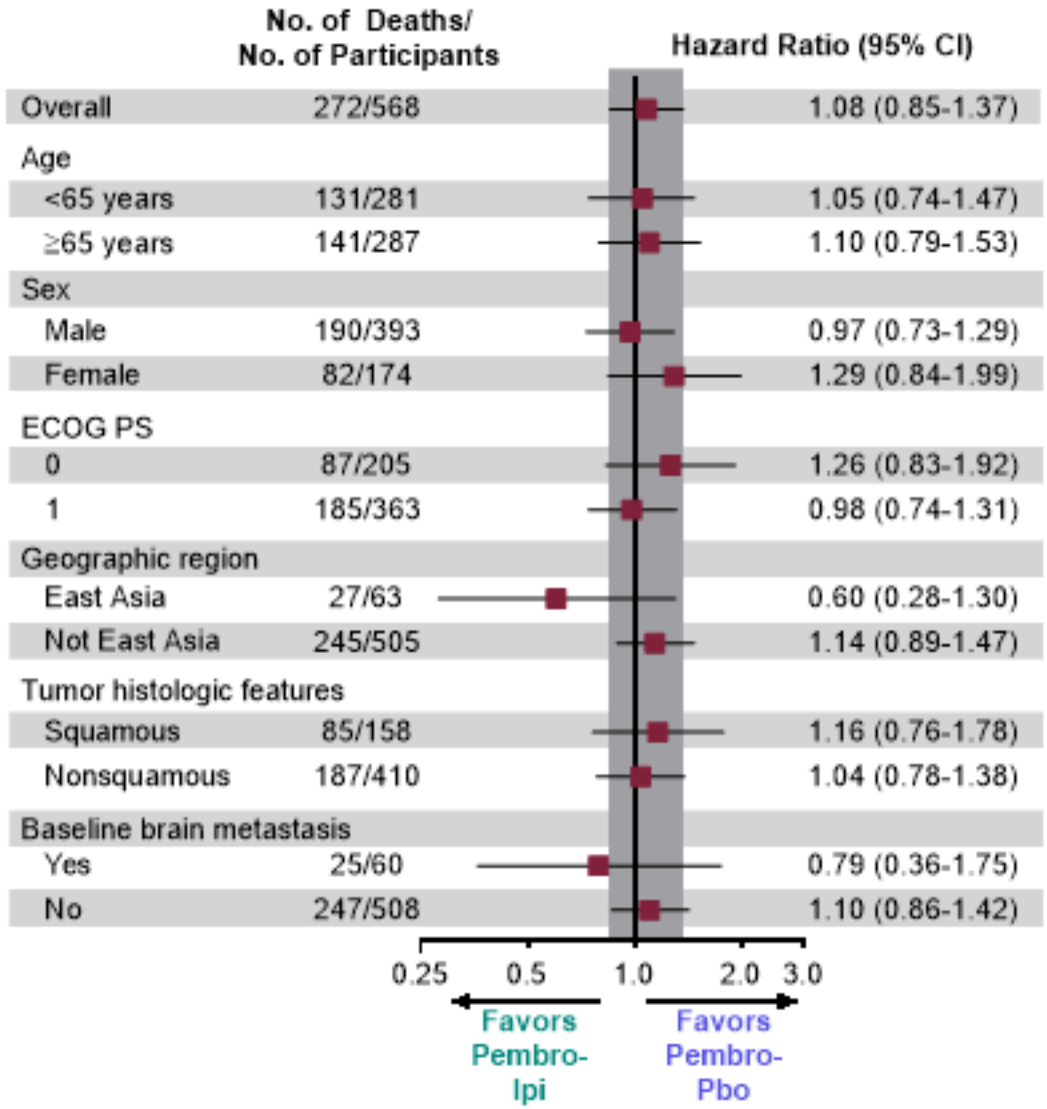


HR, 1.06 (95% CI, 0.86-1.30); *P* = 0.72

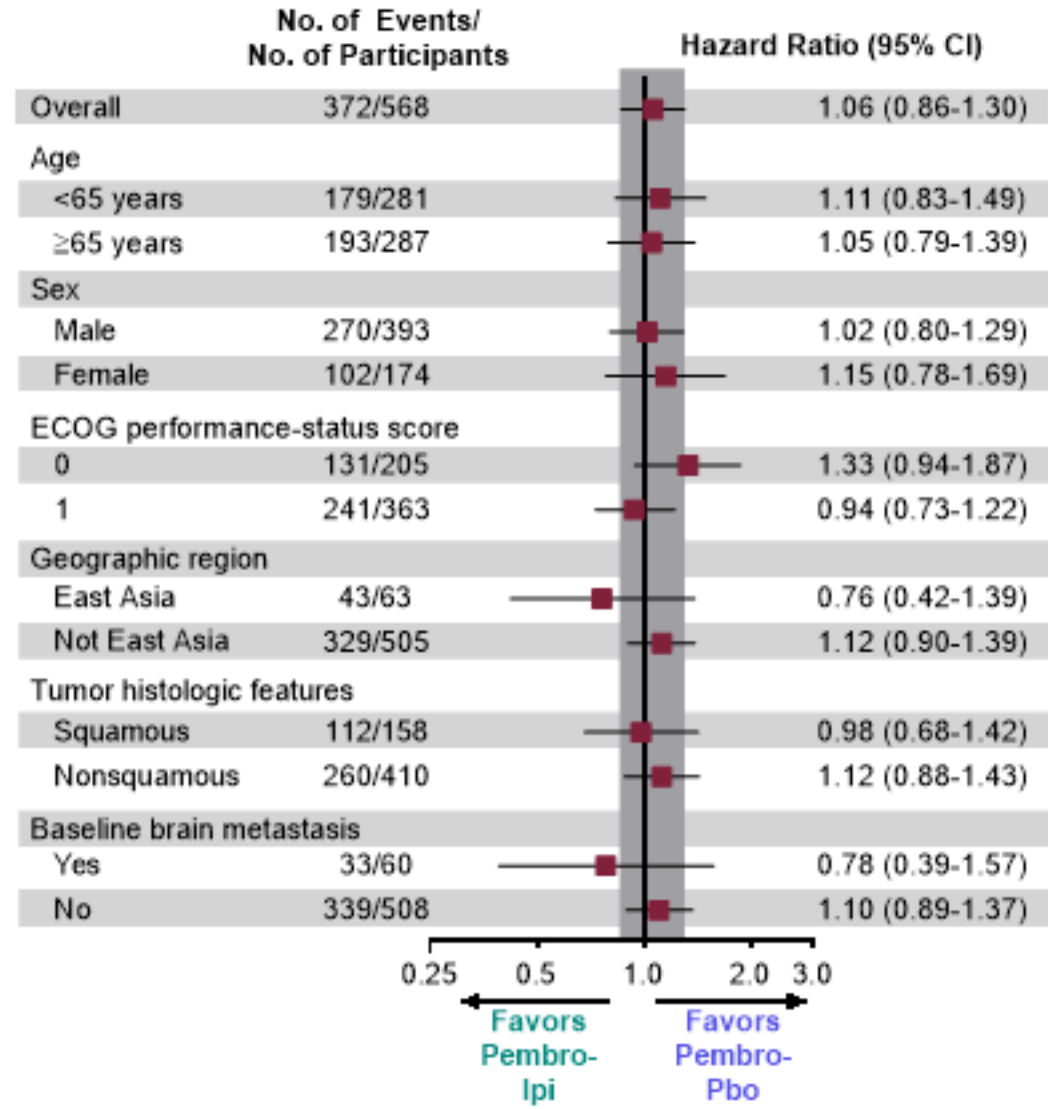
Data cutoff date: Sep 1, 2020.

OS and PFS in Subgroups

OS



PFS



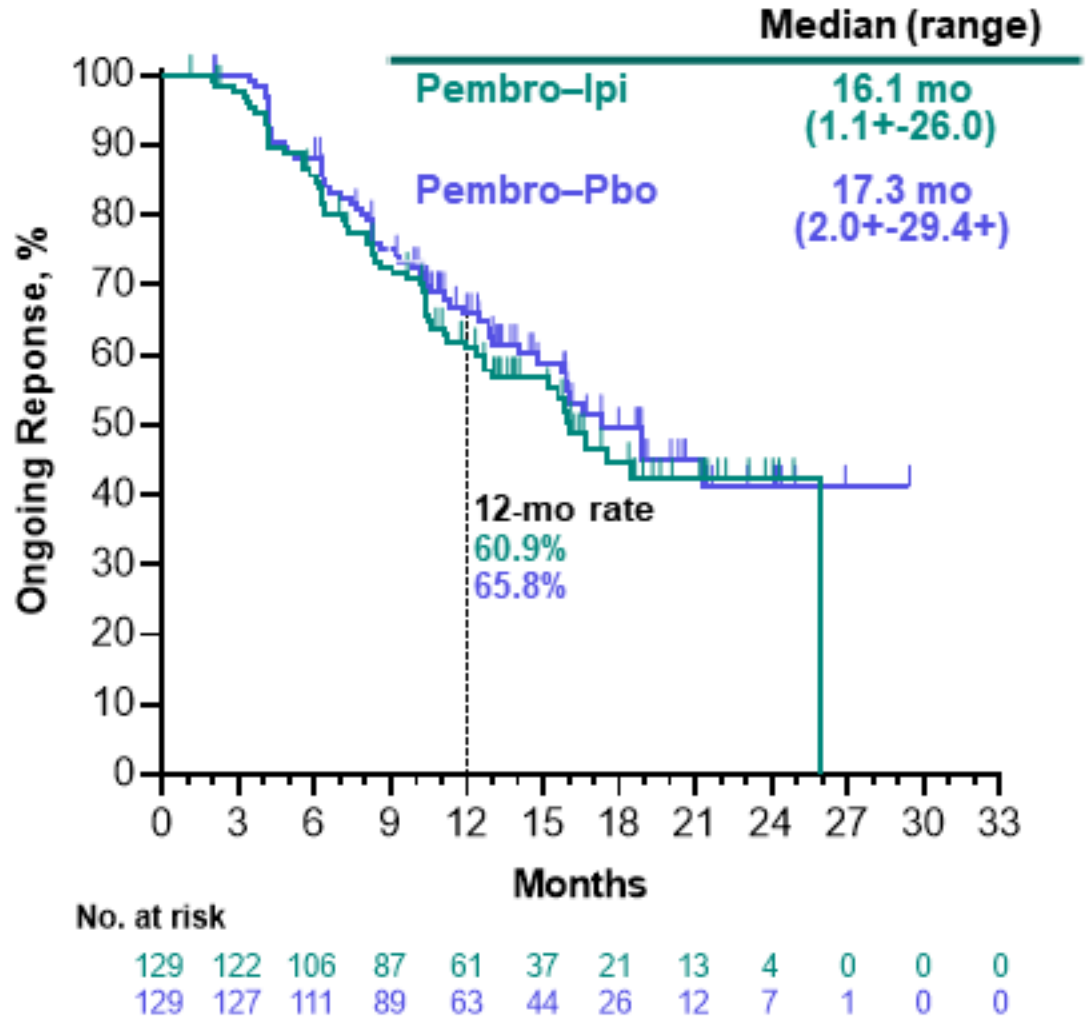
Only those subgroups for that accounted for ≥10% of the overall population are shown. Data cutoff date: Sep 1, 2020.

Summary of Response

	Pembro–Ipi N = 284	Pembro–Pbo N = 284
ORR, % (95% CI)	45.4% (39.5-51.4)	45.4% (39.5-51.4)
Best response, n (%)		
CR	13 (4.6%)	8 (2.8%)
PR	116 (40.8%)	121 (42.6%)
SD	70 (24.6%)	73 (25.7%)
PD	51 (18.0%)	44 (15.5%)
NE[a]	6 (2.1%)	6 (2.1%)
NA[b]	28 (9.9%)	32 (11.3%)

[a]≥1 post-baseline imaging assessment, but none evaluable per RECIST v1.1 by BICR.
[b]No post-baseline imaging assessment.
Data cutoff date: Sep 1, 2020.

Duration of Response



Adverse Events and Exposure

No. of Patients (%)	Treatment-Related AEs		Immune-Mediated AEs and Infusion Reactions[a]	
	Pembro–Ipi (N = 282)	Pembro–Pbo (N = 281)	Pembro–Ipi (N = 282)	Pembro–Pbo (N = 281)
Any grade	215 (76.2%)	192 (68.3%)	126 (44.7%)	91 (32.4%)
Grade 3-5	99 (35.1%)	55 (19.6%)	57 (20.2%)	22 (7.8%)
Serious	78 (27.7%)	39 (13.9%)	54 (19.1%)	20 (7.1%)
Led to death	7 (2.5%)	0	6 (2.1%)	0
Led to discontinuation[b]				
Ipi or placebo only	17 (6.0%)	9 (3.2%)	5 (1.8%)	3 (1.1%)
Both drugs	54 (19.1%)	21 (7.5%)	34 (12.1%)	12 (4.3%)

Median Treatment Exposure, Pembrolizumab–Ipilimumab vs Pembrolizumab–Placebo

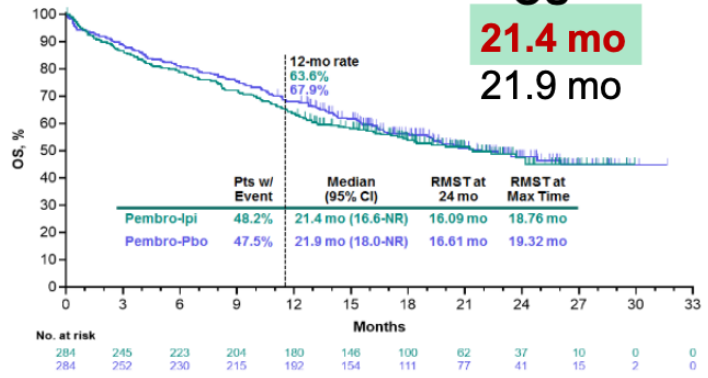
- No. of cycles[c]: 10 vs 15
- Months on ipilimumab or placebo: 5.6 vs 8.8
- Months on pembrolizumab: 6.3 vs 9.7

[a]Events were considered regardless of attribution to treatment by the investigator. [b]Patients could discontinue ipilimumab/placebo and continue pembrolizumab; pembrolizumab discontinuation required ipilimumab/placebo discontinuation. [c]One cycle = 3 weeks. Data cutoff date: Sep 1, 2020.

Efficacy data of Pembro-Ipi and Nivo-Ipi in KN598 and CM227

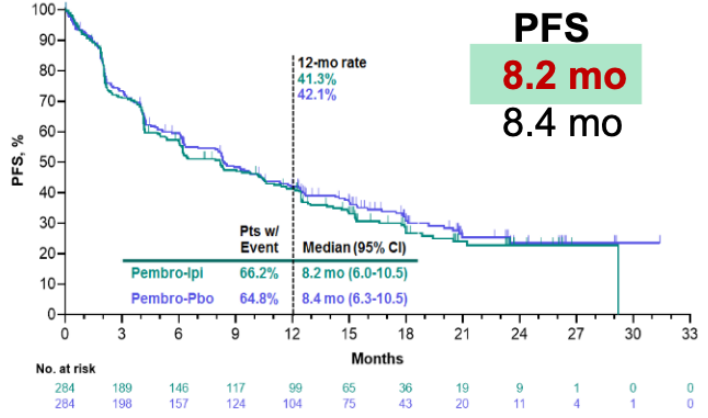
KN598

OS



OS
21.4 mo
21.9 mo

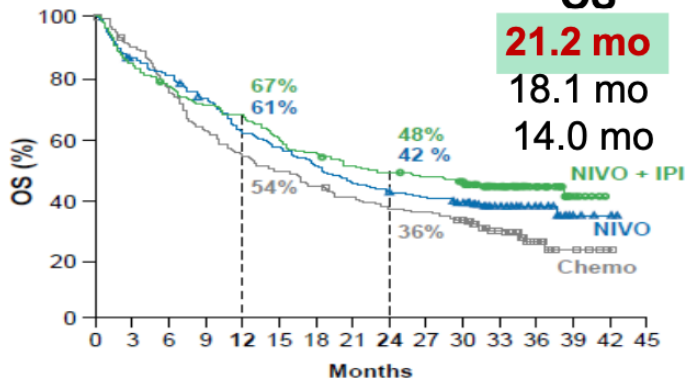
PFS



PFS
8.2 mo
8.4 mo

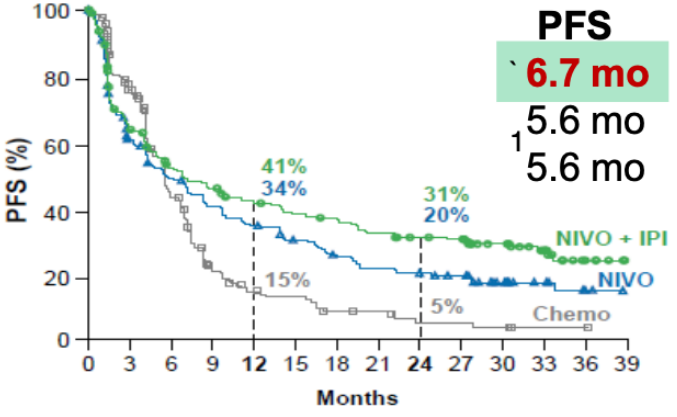
CM227 part

OS



OS
21.2 mo
18.1 mo
14.0 mo

PFS



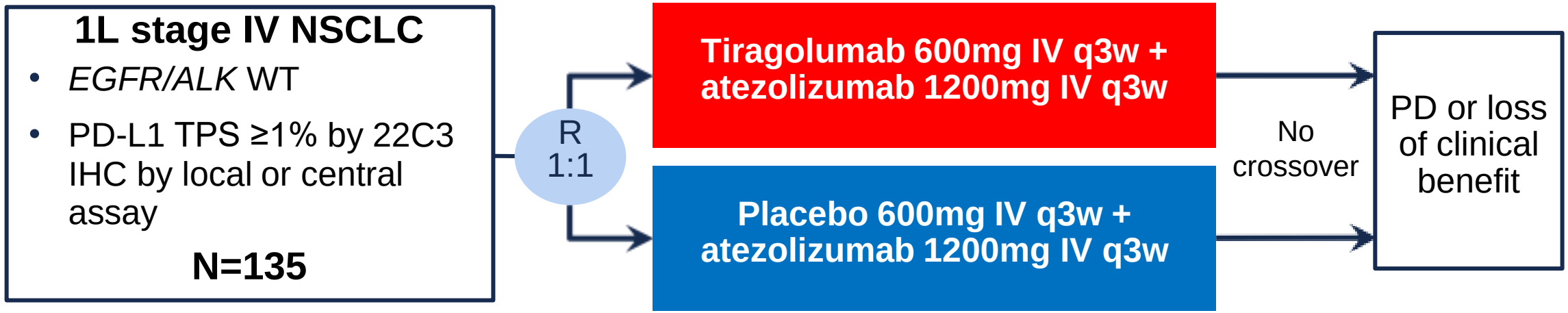
PFS
`6.7 mo
[1]5.6 mo
5.6 mo

Combo immunotherapy group in KN598 and CM227 demonstrate comparable efficacy data

1. Boyer M, WCLC,2020, Abstract 4248;
2. Hellmann et al. NEJM (2019)

CITYSCAPE study design

Updated Analysis: Data cut-off Dec 2019



Stratification factors:

- PD-L1 TPS (1–49% vs ≥50%)
- Histology (non-squamous vs squamous)
- Tobacco use (yes vs no)

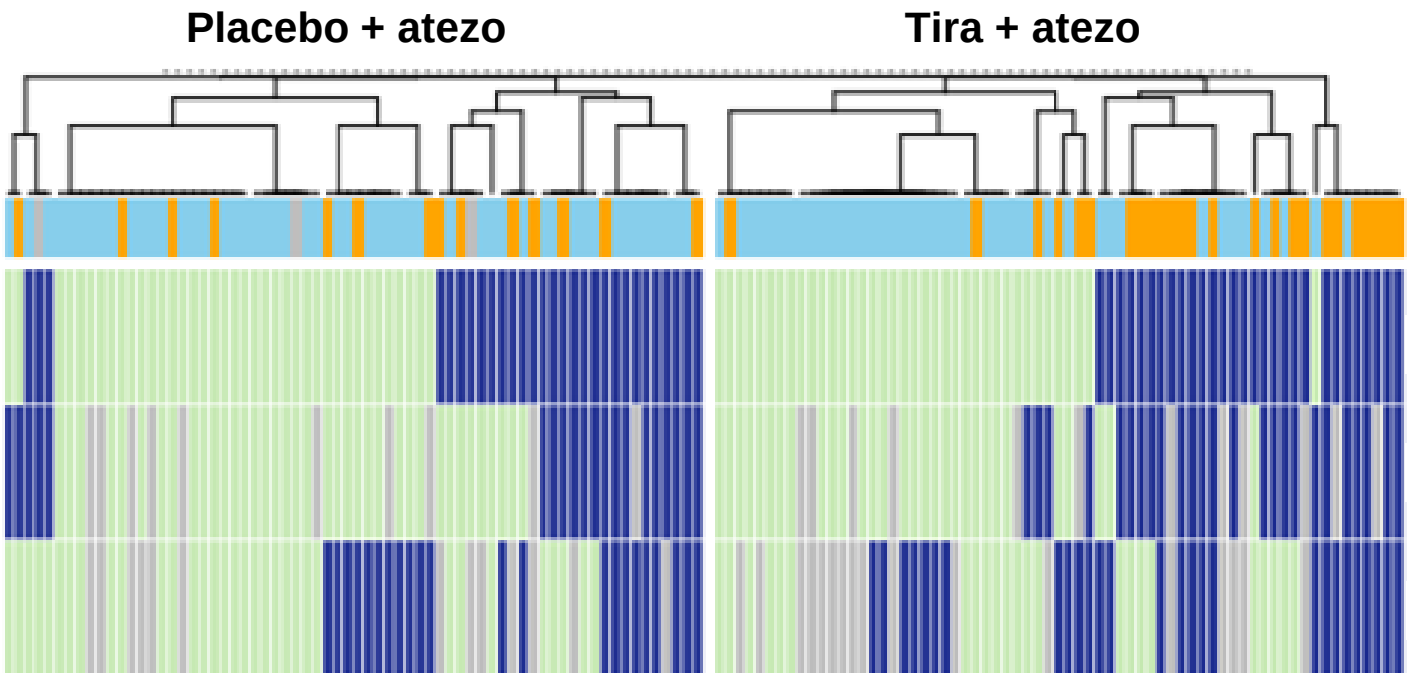
- **Co-primary endpoints: ORR** and **PFS**
- Key secondary endpoints: safety, DoR, OS, PROs
- Exploratory endpoints: efficacy analysis by PD-L1 status

DoR, duration of response; OS, overall survival; PD, progressive disease; PRO, patient-reported outcomes; q3w, every 3 weeks; R, randomized; WT, wild-type

Rodriguez-Abreu et al. ASCO 2020 (abstract 9503)

https://bit.ly/3mZKum8

Prevalence of PD-L1 subgroups was comparable between the two IHC assays



PD-L1 22C3: high TPS ≥50%; low TPS 1–49%
PD-L1 SP263: high TC ≥50%; low TC <50%
TIGIT IHC: high ≥5%; low <5%

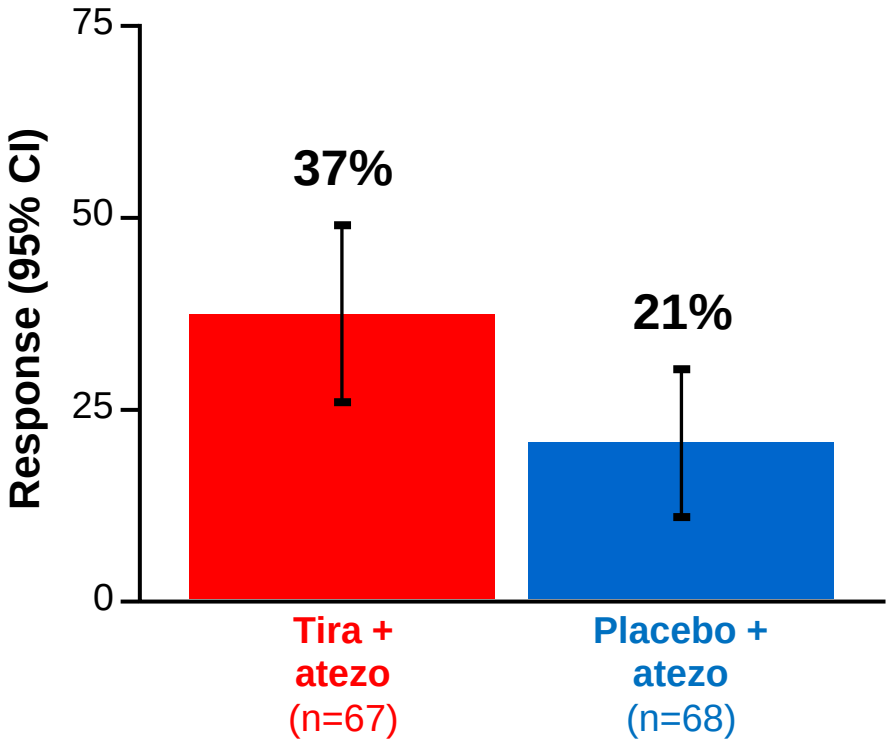
- **Comparable** prevalence of PD-L1 subgroups identified with two different PD-L1 assays
- TIGIT may identify **different patient populations** than PD-L1

CR, complete response; NE, non-evaluable; PR, partial response; SD, stable disease

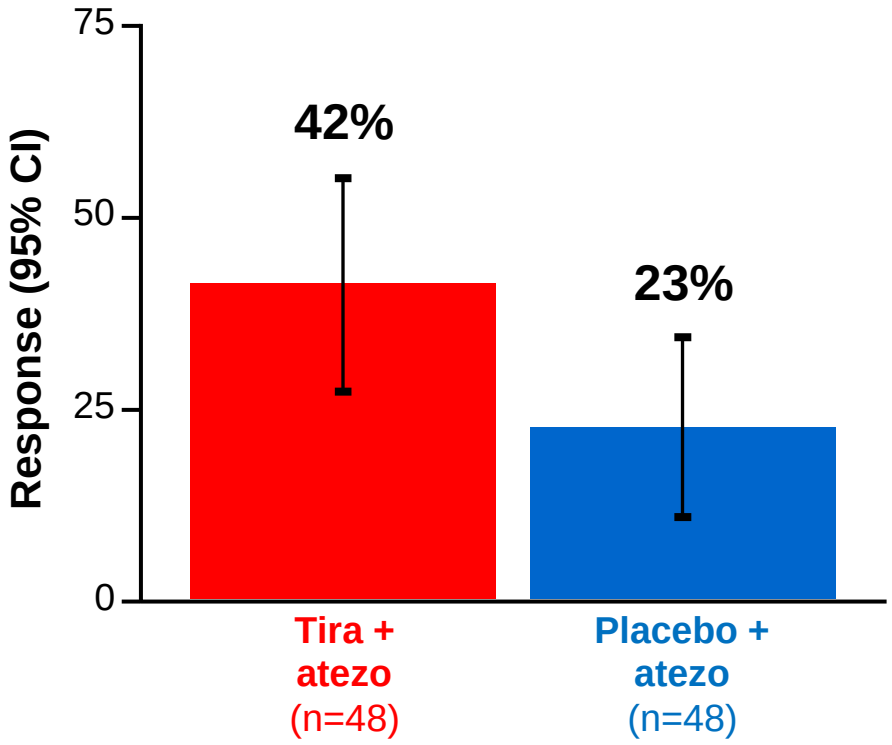
https://bit.ly/3mZKum8

ORR in PD-L1-positive patients: consistency between two PD-L1 assays

22C3 TPS ≥1%[1]



SP263 TC ≥1% (& 22C3 TPS ≥1%)

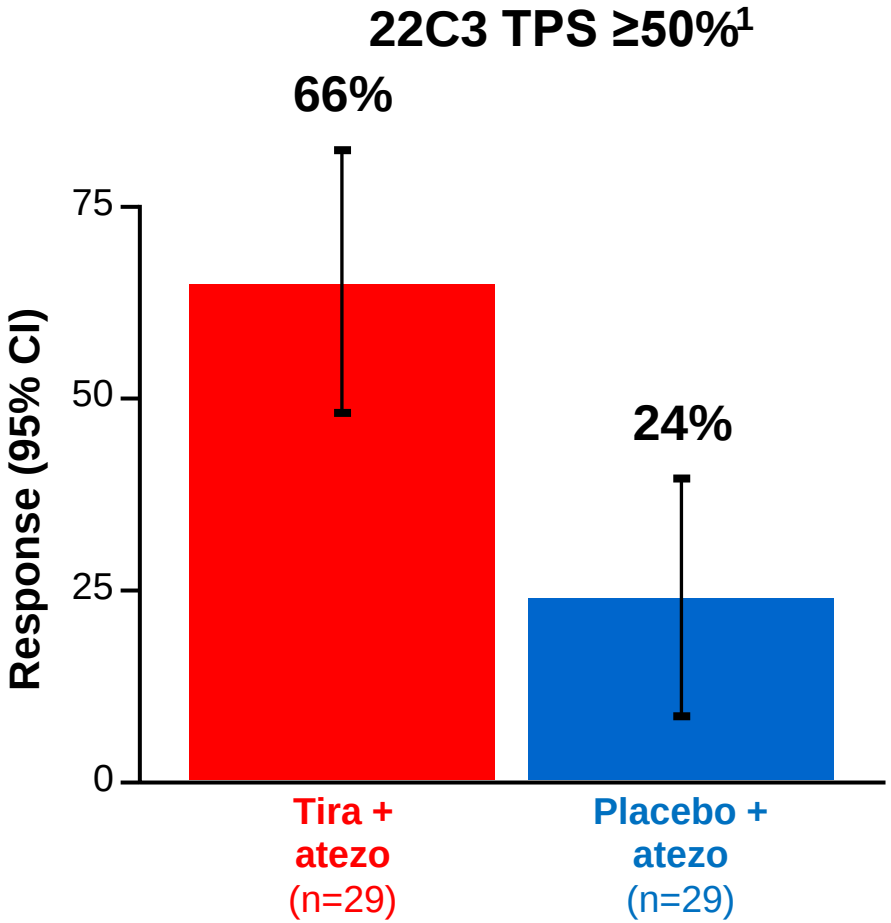


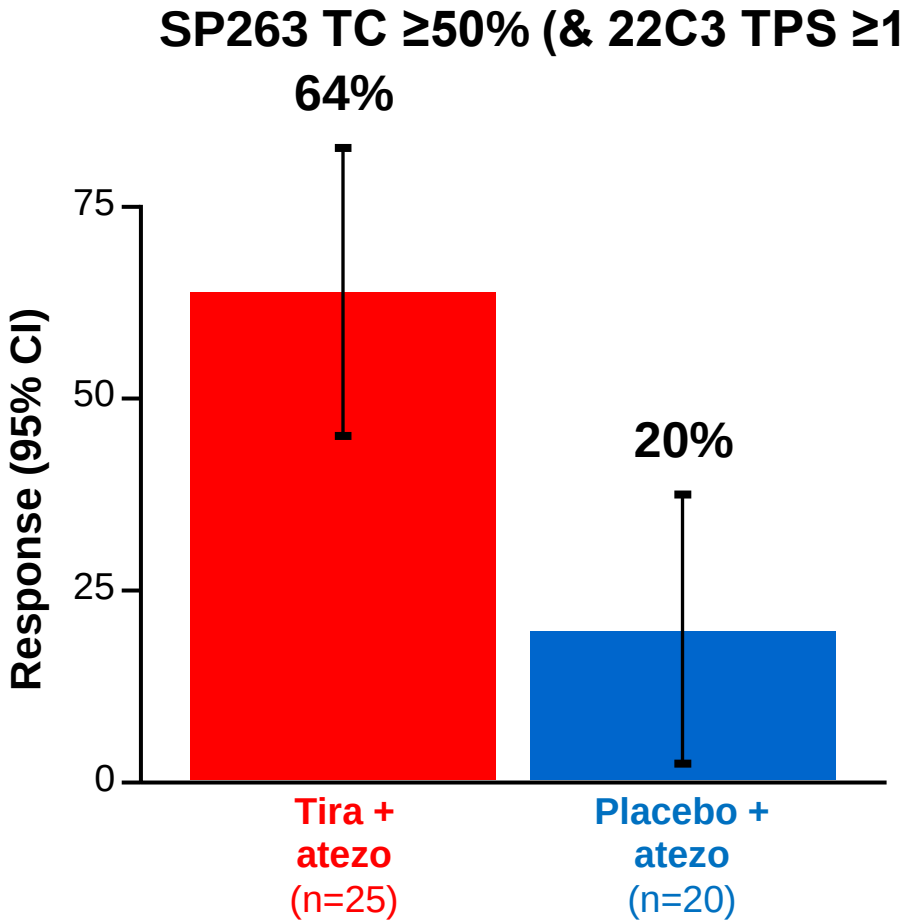
CI, confidence interval

[1]Rodriguez-Abreu et al. ASCO 2020 (abstract 9503)

https://bit.ly/3mZKum8

ORR in PD-L1-high patients: consistent between two PD-L1 assays





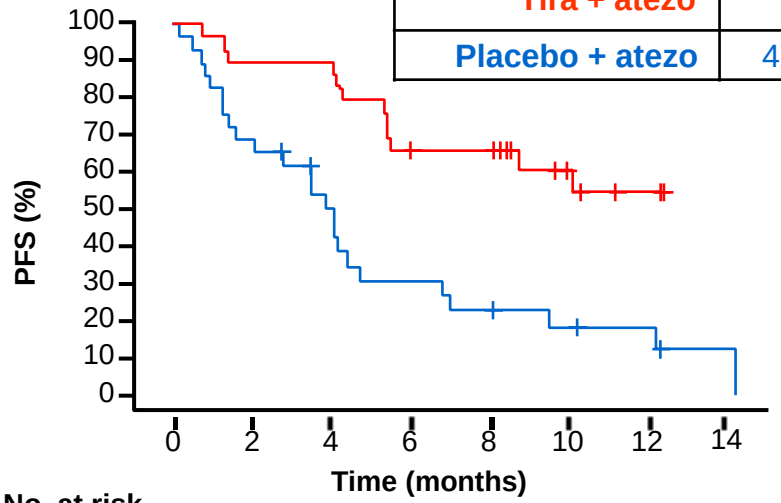
[1]Rodriguez-Abreu et al. ASCO 2020 (abstract 9503)

https://bit.ly/3mZKum8

PFS in PD-L1-high patients: consistent HRs between two PD-L1 assays

22C3 TPS ≥50%[1]

	Median	HR (95% CI)
Tira + atezo	NE	0.30 (0.15–0.61)
Placebo + atezo	4.11 mo	

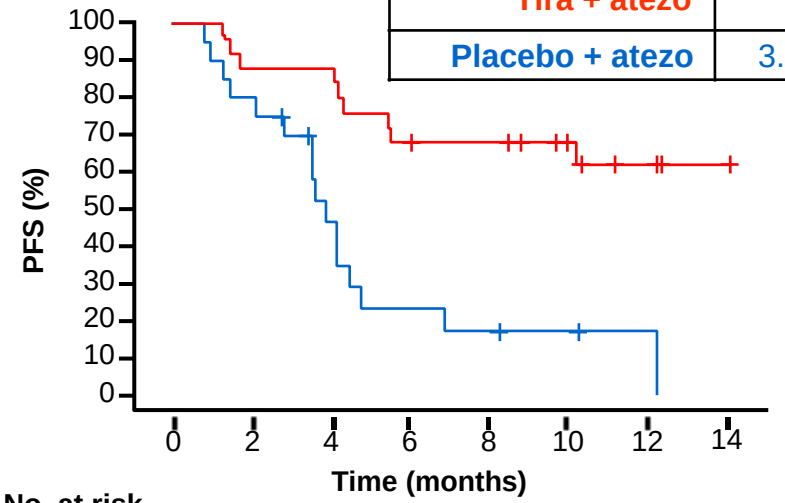


No. at risk

Placebo + atezo	29	20	13	8	6	4	3	1
Tira + atezo	29	26	26	19	18	10	3	0

SP263 TC ≥50% (& 22C3 TPS ≥1%)

	Median	HR (95% CI)
Tira + atezo	NE	0.23 (0.10–0.53)
Placebo + atezo	3.88 mo	



No. at risk

Placebo + atezo	20	16	8	4	3	2	1	0
Tira + atezo	25	22	22	17	16	11	5	1

Comparable ORR and PFS improvements with tiragolumab + atezolizumab vs atezolizumab monotherapy were seen between the PD-L1-high (TC ≥50%) subgroup defined by SP263 (**PFS HR 0.23,** 95% CI: 0.10 0.53) and the PD-L1-high (TPS ≥50%) subgroup defined by 22C3

[1]Rodriguez-Abreu et al. ASCO 2020 (abstract 9503)

https://bit.ly/3mZKum8

PACIFIC: STUDY DESIGN

Phase 3, randomized, double-blind, placebo-controlled, multicenter, international study[1]

- Unresectable, Stage III NSCLC without progression after definitive platinum-based cCRT (≥2 cycles)
- 18 years or older
- WHO PS score 0 or 1
- If available, archived pre-cCRT tumor tissue for PD-L1 testing*

All-comers population
(i.e. irrespective of PD-L1 status)

N=713 randomized

1–42 days post-cCRT

R

Durvalumab
10 mg/kg q2w for up to 12 months
N=476

2:1 randomization, stratified by age, sex, and smoking history

Placebo
q2w for up to 12 months
N=237

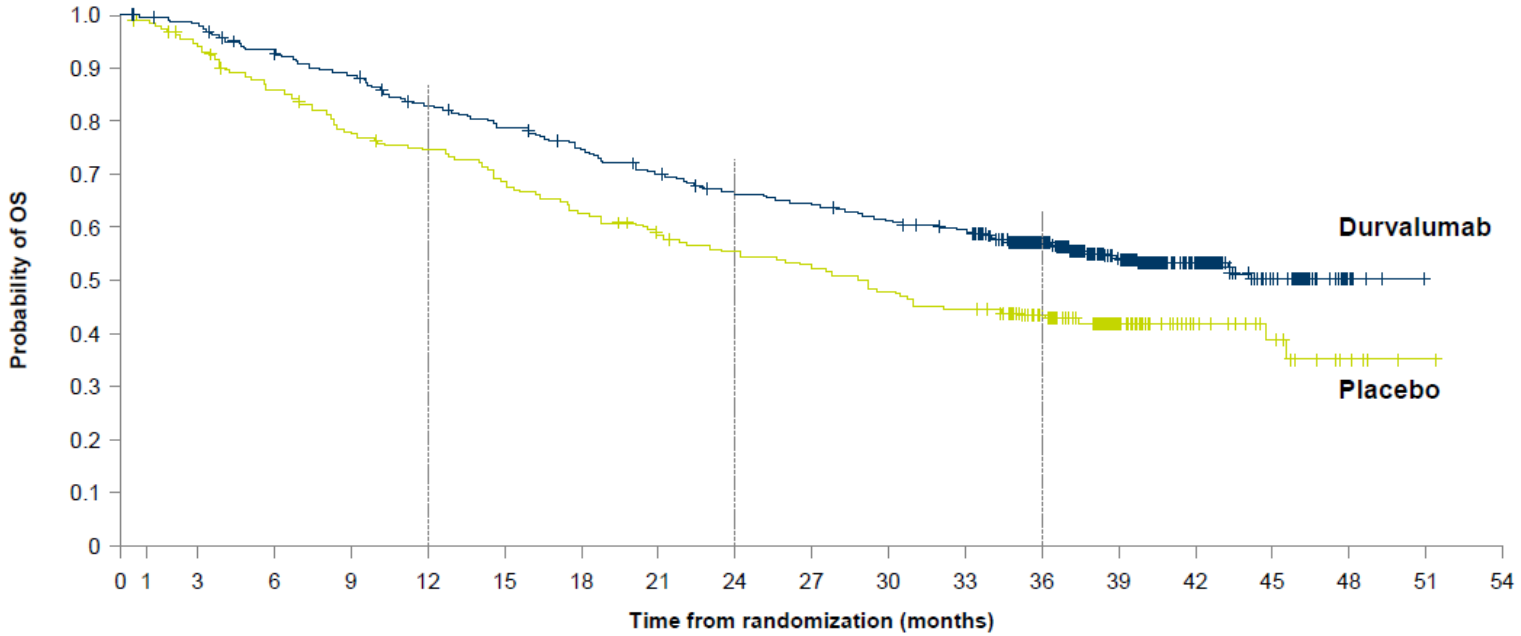
Primary endpoints
- PFS by BICR using RECIST v1.1†
- OS

Key secondary endpoints
- ORR, DoR and TTDM by BICR
- PFS2 by investigator
- Safety
- PROs

Update OS

	No. of events/ total no. of patients (%)	Median OS (95% CI) months	12-month OS rate (95% CI) %	24-month OS rate (95% CI) %	36-month OS rate (95% CI) %
Durvalumab	210/476 (44.1)	NR (38.4–NR)	83.1 (79.4–86.2)	66.3 (61.8–70.4)	57.0 (52.3–61.4)
Placebo	134/237 (56.5)	29.1 (22.1–35.1)	74.6 (68.5–79.7)	55.3 (48.6–61.4)	43.5 (37.0–49.9)

Stratified hazard ratio for death, 0.69 (95% CI, 0.55–0.86)
Stratified hazard ratio for death from the primary analysis,[9] 0.68 (95% CI, 0.53–0.87)

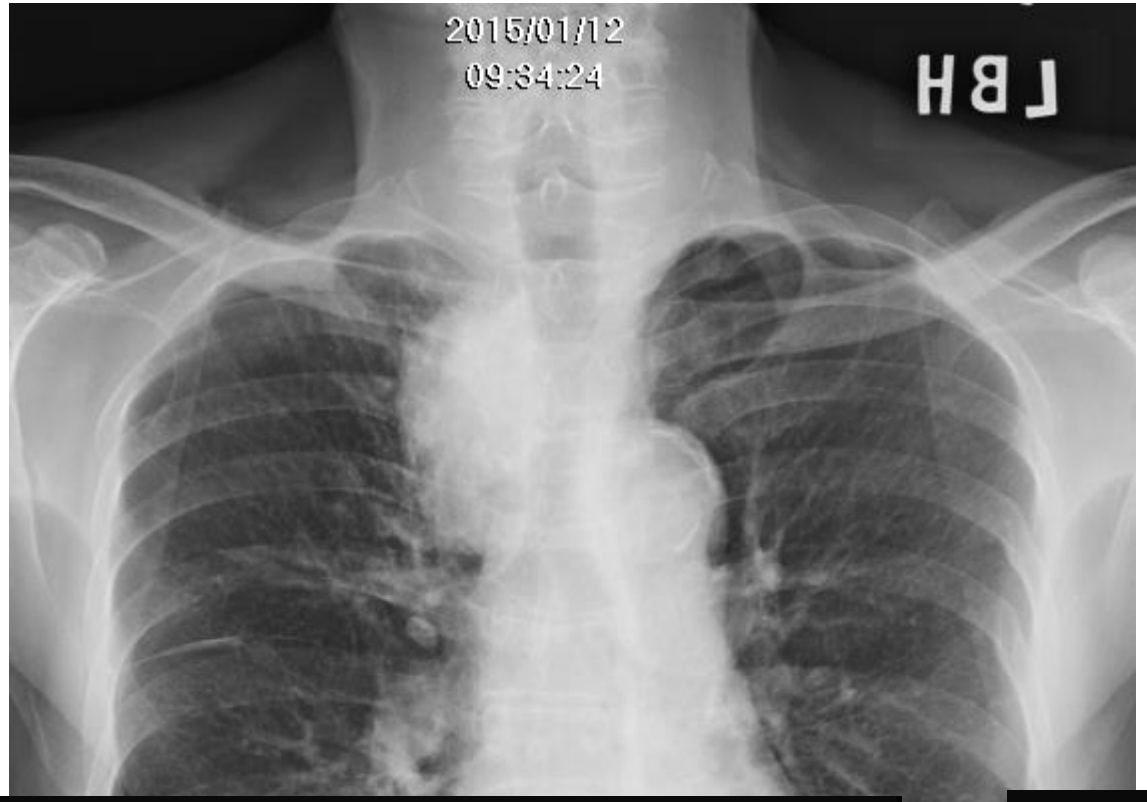


No. at risk																			
Durvalumab	476	464	431	415	385	364	343	319	298	289	274	263	205	132	73	33	7	0	0
Placebo	237	220	199	179	171	156	143	133	123	116	107	99	79	49	25	13	5	1	0

NR, not reached

Take Home Message

- Anti-PD(L)1 provided meaningful and durable benefit in OS and PFS as 2nd line or later treatment of NSCLC patients
- I/O mono for PD-L1≥50% patients is feasible
- Second-course immunotherapy at the time of disease progression was feasible
- IO Chemo (+Bev) combo provided survival benefits in patients without driver mutations
- PD-L1≥50% patients may not benefit of combo immunotherapy

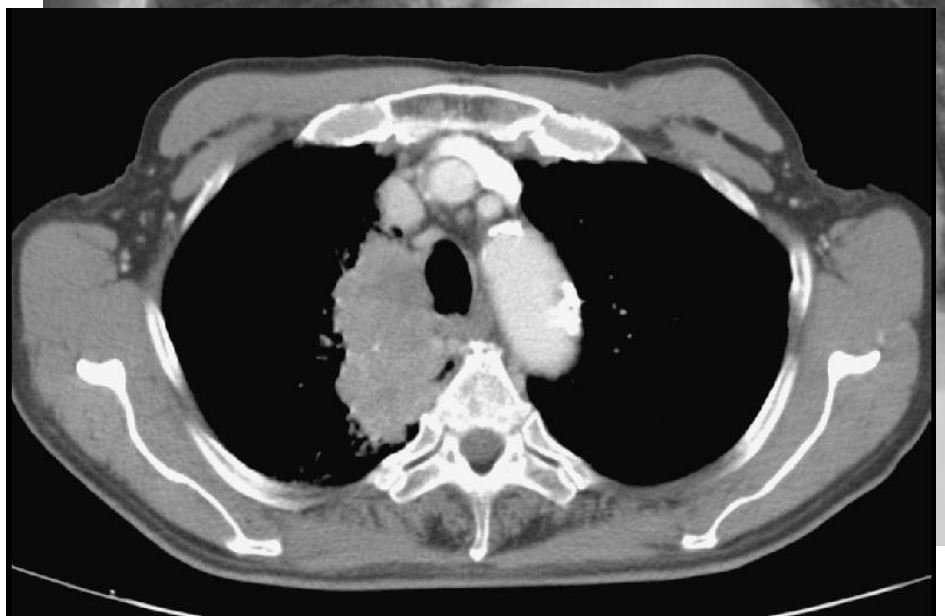


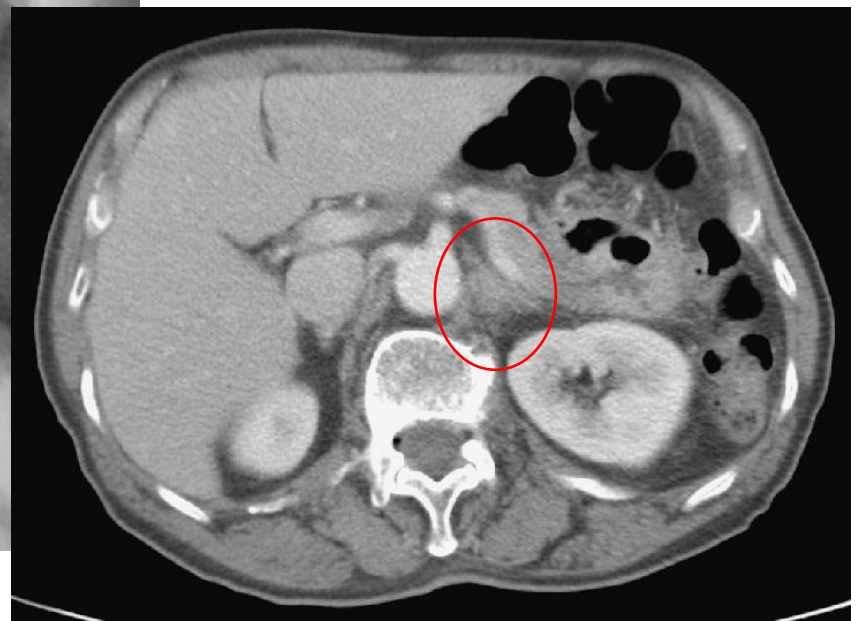
78 y/o Male
C.C: dizziness and weight loss
Smoking Hx: 1PPD for 50+ years, just quit

CT guided biopsy: Adenocarciona, TTF1(+),

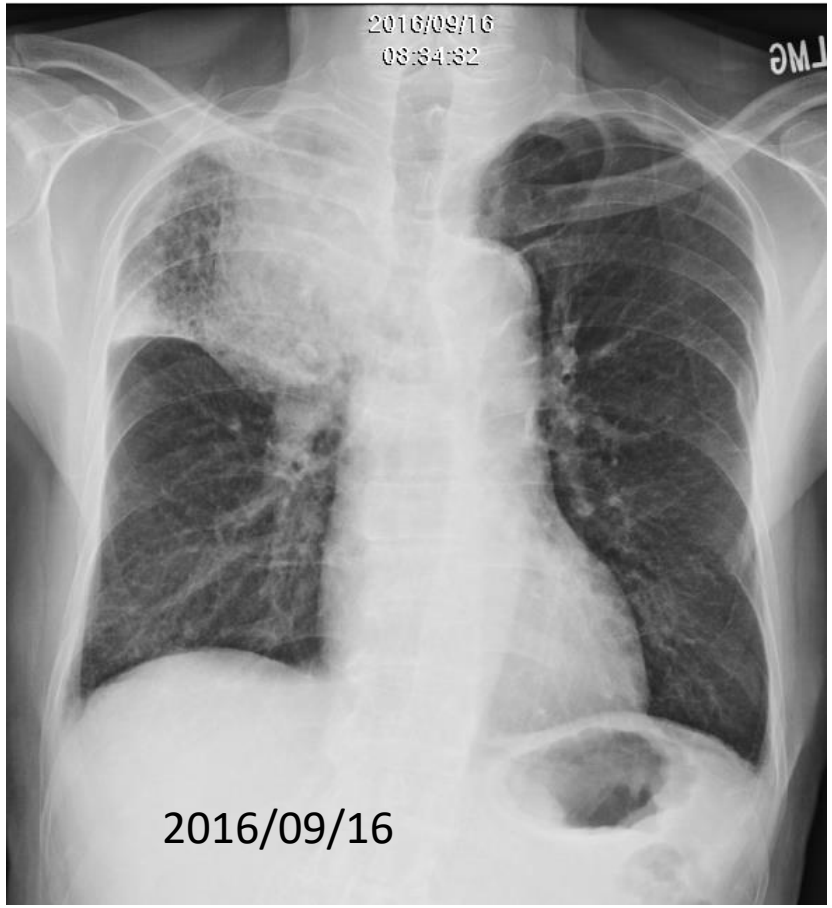
EGFR mutation: unfound

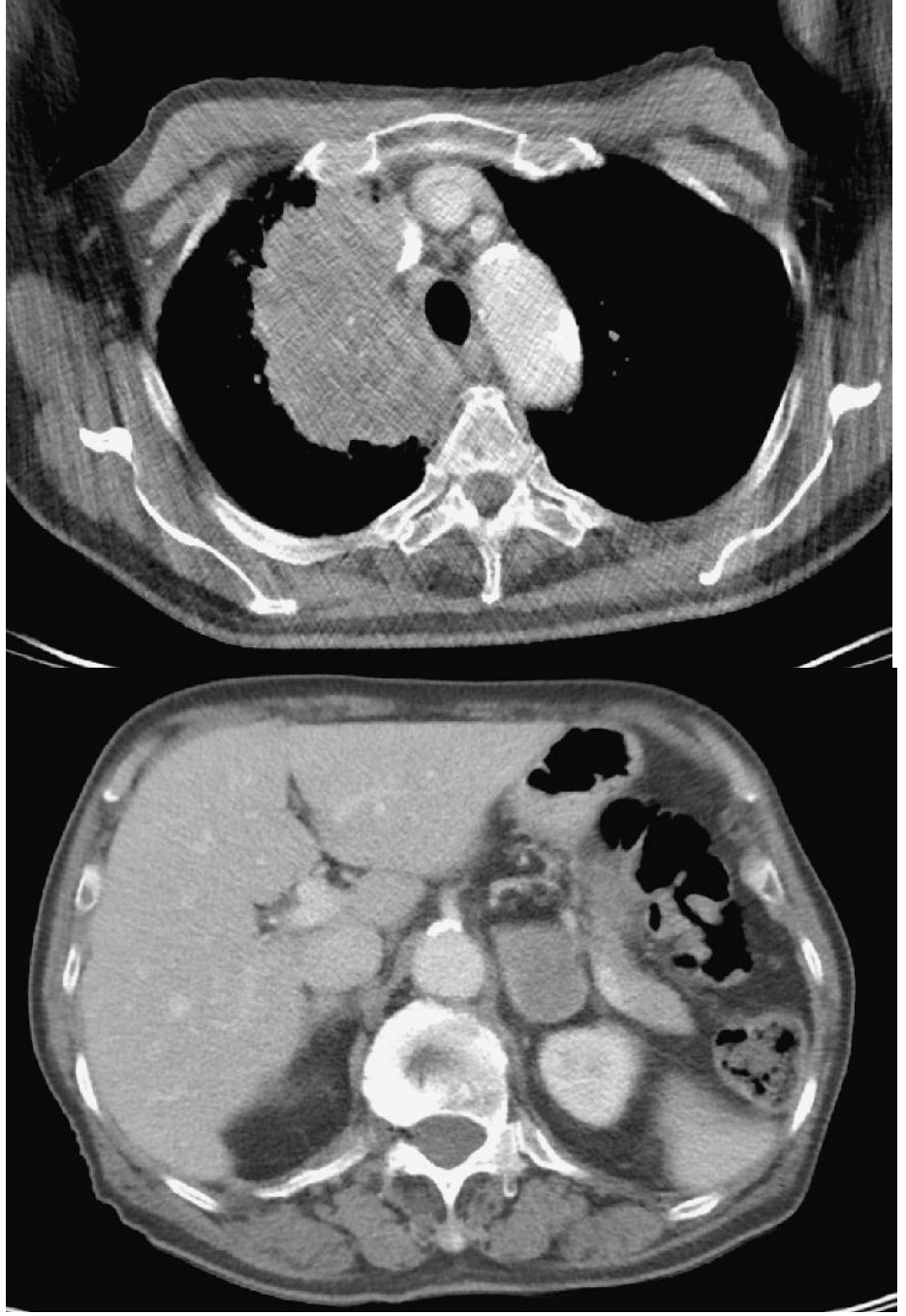
cT4N2M1b, with Lt adrenal gland metastases



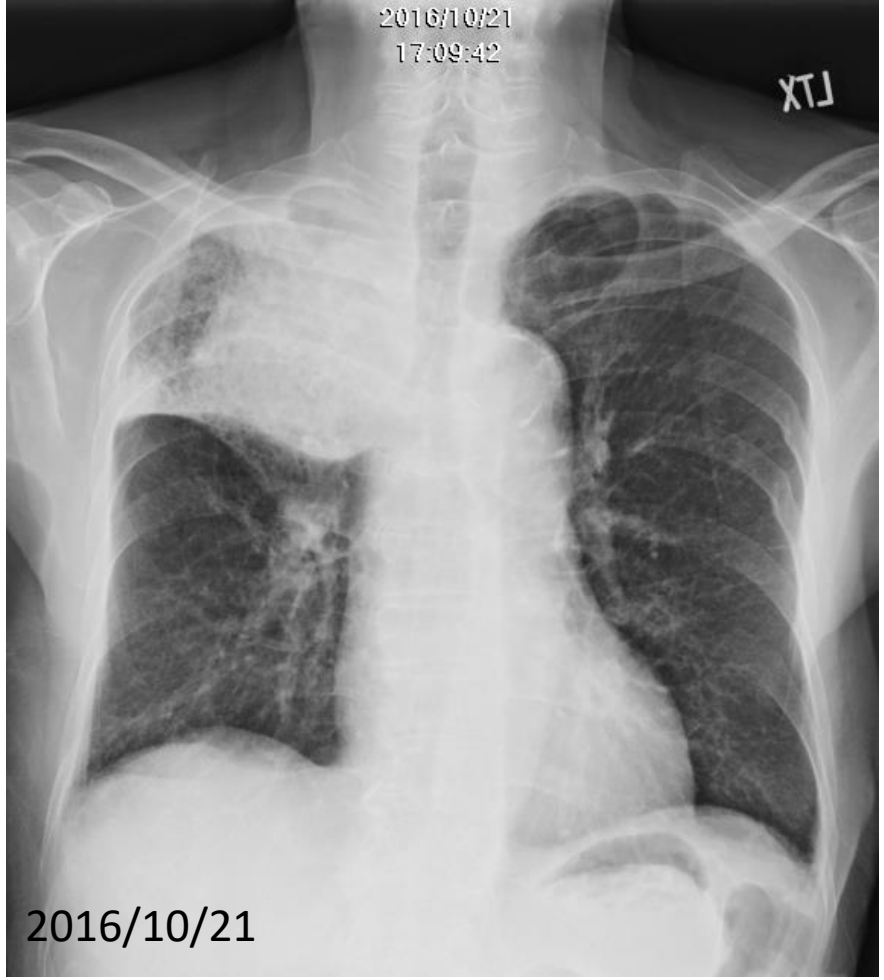


Intially, refused any Treatment.
And Then Oral Vinorebline,
Pemetrexed,
Gemcitabine
Erlotinib, and disease progression in Sep 2016

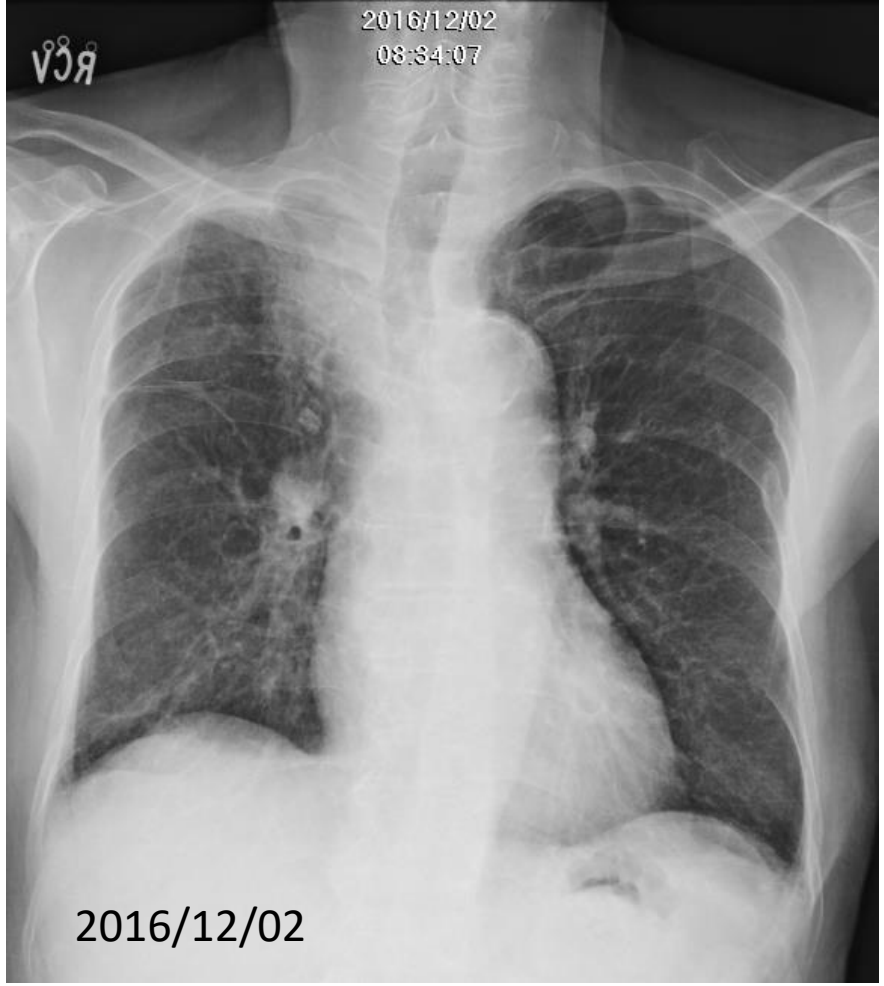




Refuse any Chemotherapy



2016/10/21

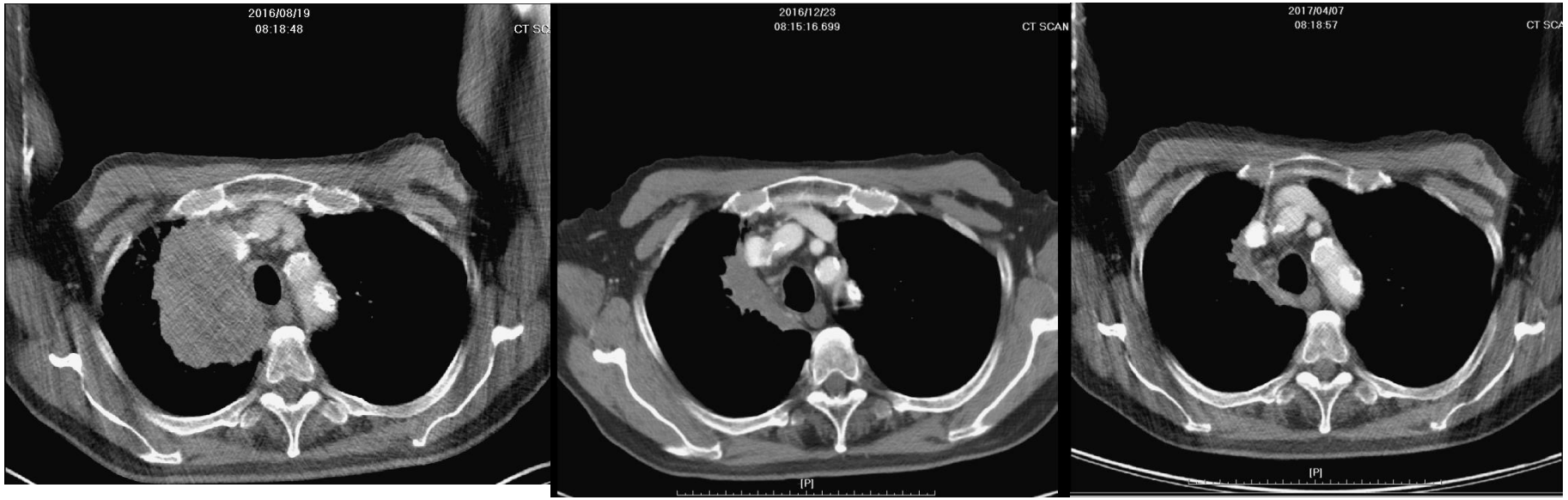


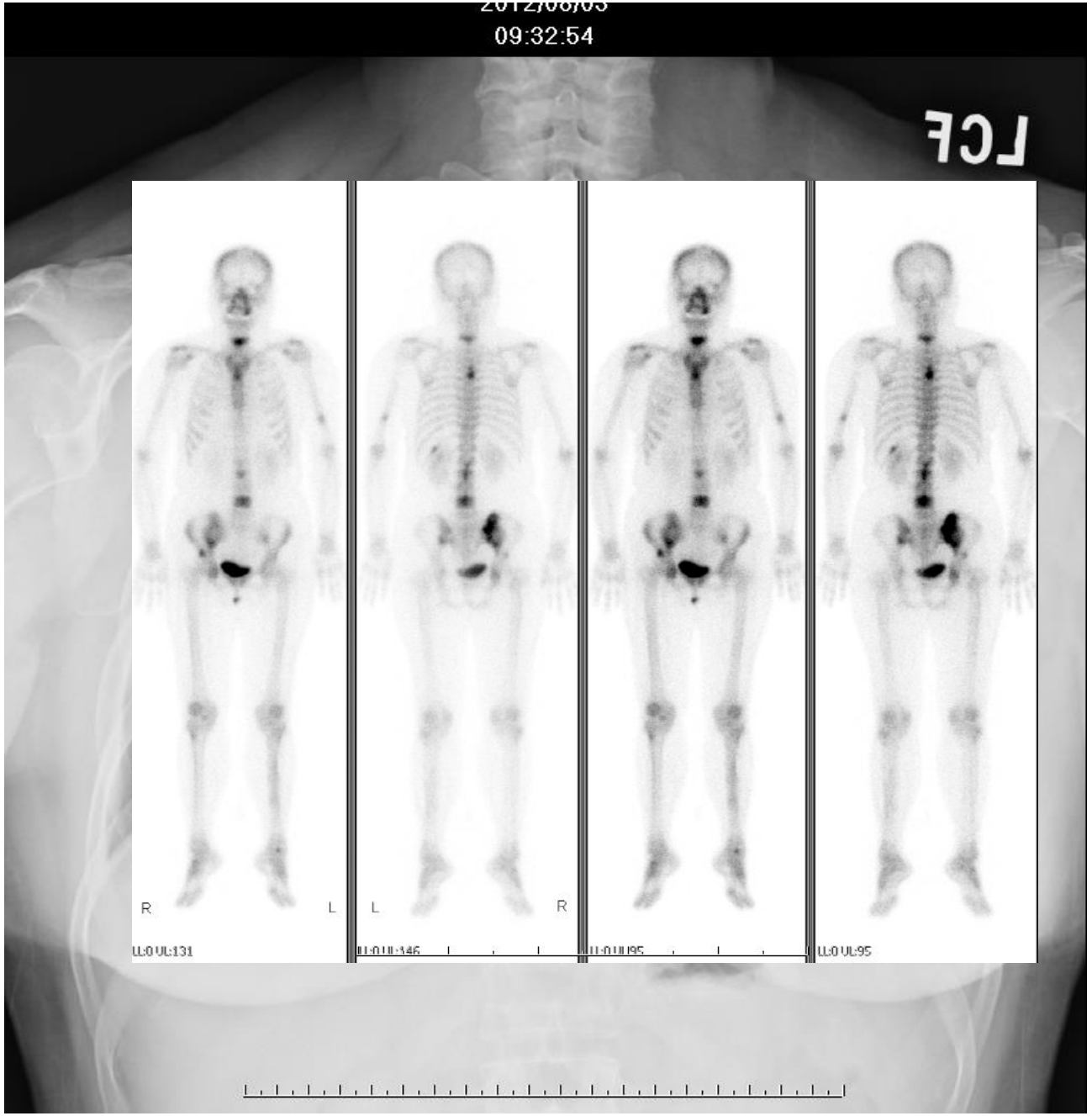
2016/12/02

First Dose Ketruda on 2016/10/22

2 hours after infusion, fever, chills developed and subsided after supportive care

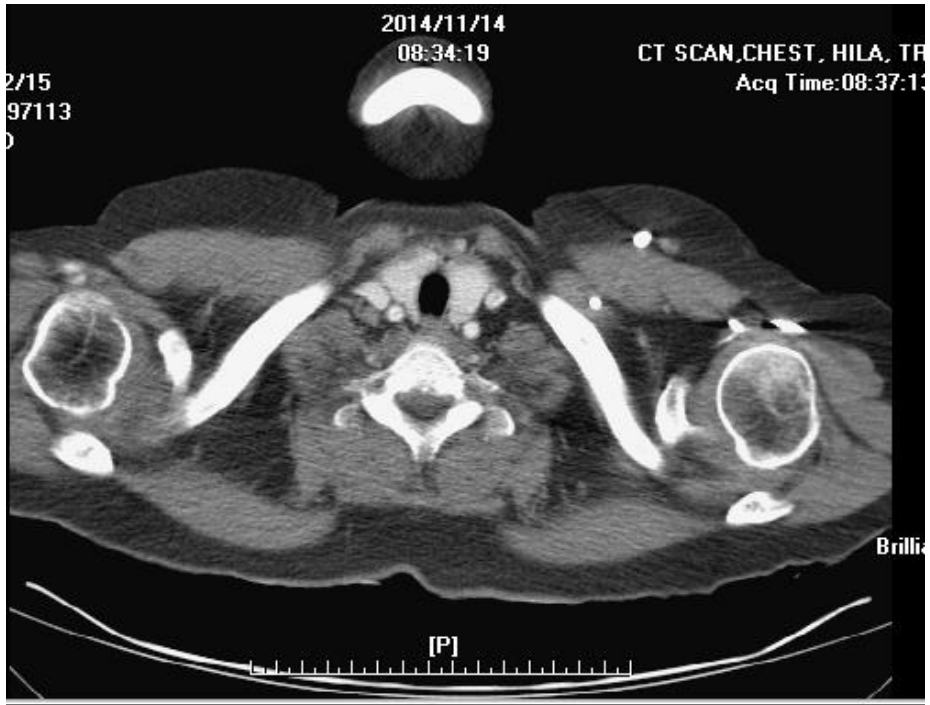
After 2 cycles of Pembrolizumab

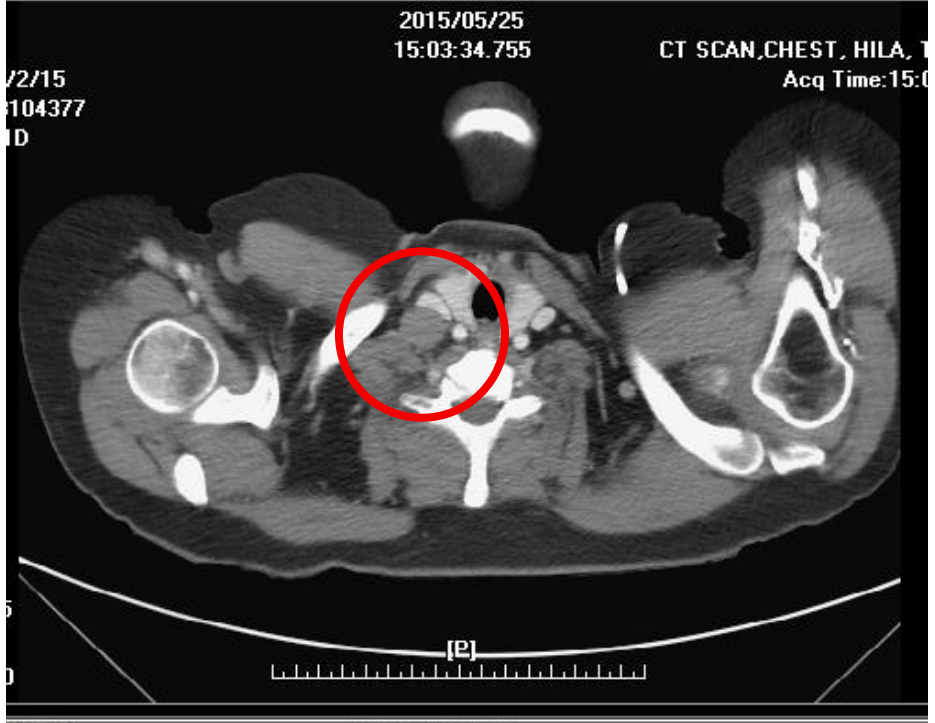

2016/08/19
08:18:48
2016/12/23
08:15:16.699
CT SCAN
[P]
2017/04/07
08:18:57
[P]



56 y/o Female

Bone tissue, CT guild biopsy --- Metastatic adenocarcinoma, TTF1+.


2014/11/14
08:34:19
CT SCAN,CHEST, HILA, TR
Acq Time:08:37:1
[P]


2015/05/25
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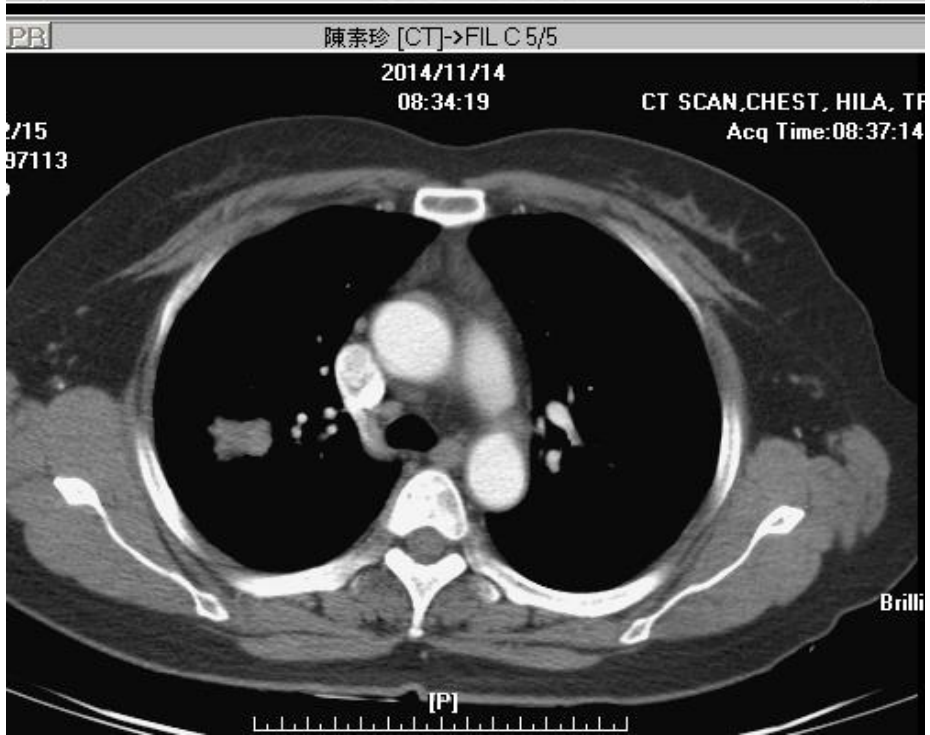
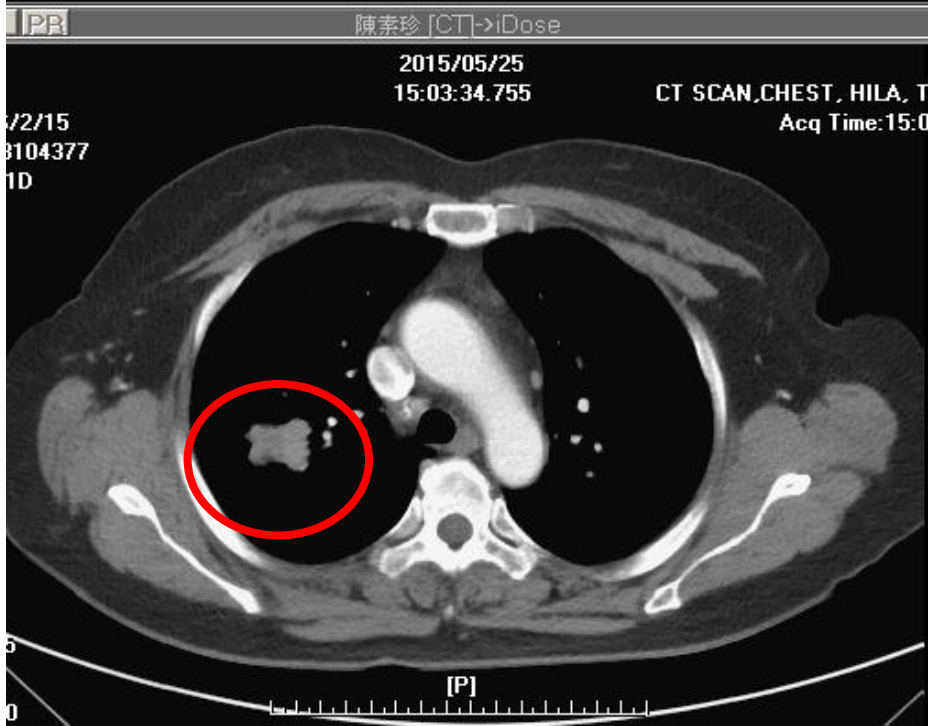
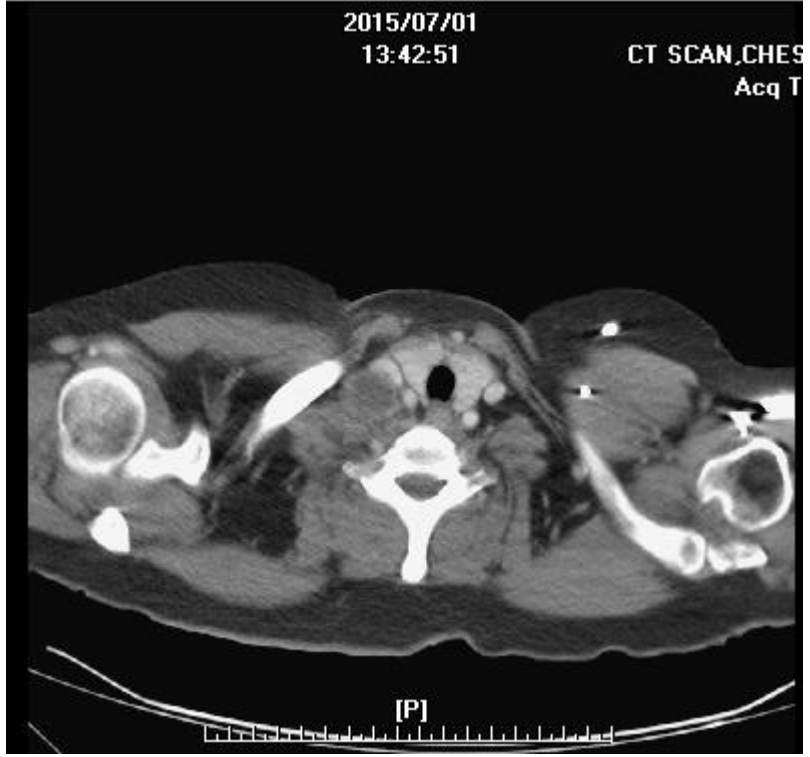
Acq Time:15:
[P]


PR
陳素珍 [CT]->FIL C 5/5
2014/11/14
08:34:19
CT SCAN,CHEST, HILA, TR
Acq Time:08:37:14
[P]


PR
陳素珍 [CT]->iDose
2015/05/25
15:03:34.755
CT SCAN,CHEST, HILA,
Acq Time:15:
[P]



2015/07/07
Anti-PDL1