



Terapie adiuvanti: target therapy e immunoterapia

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IOV, IRCCS

Disclosures

Advisory Boards / Honoraria / Speakers' fee / Consultant for:

Amgen, AstraZeneca, BMS, Eli Lilly, Jansenn, MSD, Novartis, Roche

Unconditioned research support by:

AstraZeneca, Roche

MDT facing early and locally advanced resectable NSCLC

Past

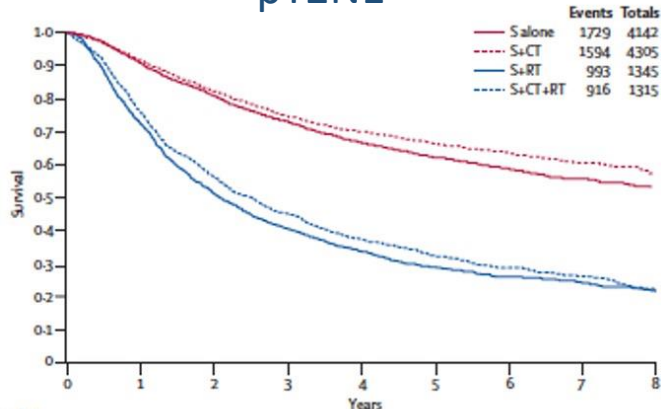
ADJUVANT

Stage II-III upfront resection

cT2N0



pT2N1



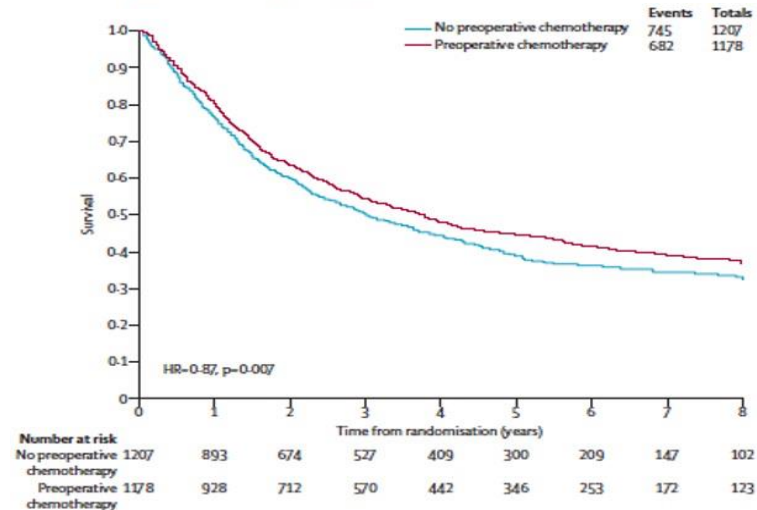
Number at risk	0	1	2	3	4	5	6	7	8
S alone	4142	3648	3102	2584	2083	1601	841	407	148
S+CT	4305	3809	3261	2746	2278	1785	936	473	165
S+RT	1345	956	660	503	376	282	202	141	85
S+CT+RT	1315	977	711	532	385	279	203	143	84



NEO-ADJUVANT

Stage II-III resectable after induction

cT4N1



Five-year survival absolute benefit of 4% with neo/adjuvant chemotherapy

MDT facing early and locally advanced resectable NSCLC

Present

ADJUVANT

NEO-ADJUVANT



Stage II-III upfront resection

Stage II-III resectable after induction

cT2N0

cT4N1



pT2N1

Oncogene-addicted

Non oncogene-addicted

Non oncogene-addicted

Oncoagene-addicted



Adjuvant chemo or not +
3y osimertinib in EGFRm+

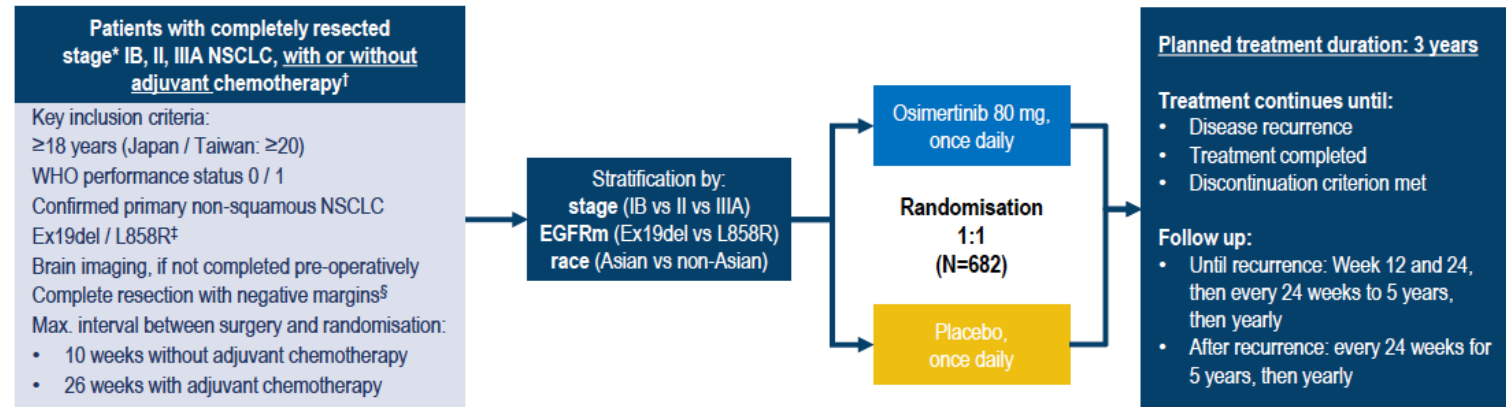
ADAURA study

Phase III EGFR-TKI studies in resected EGFRm NSCLC

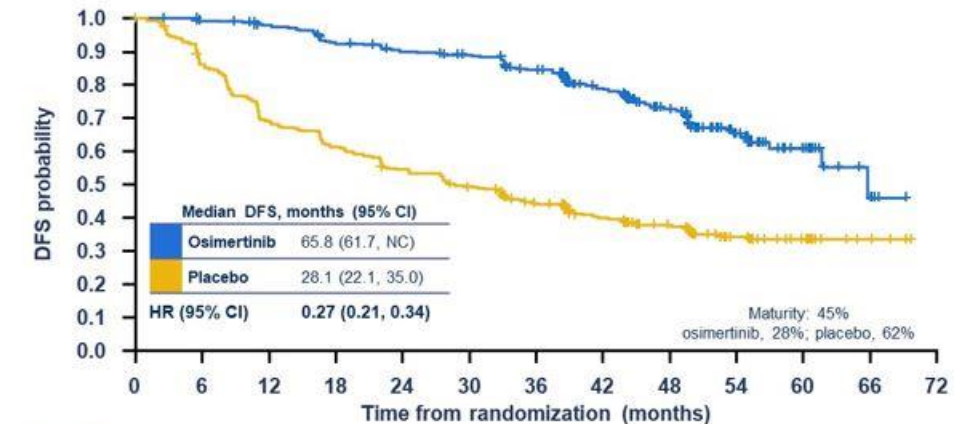
Date	Adjuvant treatment	Phase III study	Key results	Conclusion
2015	Erlotinib vs placebo	RADIANT ¹ (stage IB–IIIA)	EGFRm subgroup: DFS HR 0.75 (95% CI: 0.48, 1.16); p=0.1906	Non-significant DFS improvement
2020	Gefitinib vs chemotherapy	ADJUVANT / CTONG1104 ^{2,3} (stage II–IIIA)	Updated DFS HR 0.56 (95% CI: 0.40, 0.79); p=0.001; OS HR, 0.92 (95% CI: 0.62, 1.36); p=0.674	Significant DFS benefit, but no OS benefit
2020	Osimertinib vs placebo	ADAURA ^{4,5} (stage IB–IIIA)	DFS HR, 0.20 (99.12% CI: 0.14, 0.30); p<0.0001	Highly significant DFS benefit
2021	Gefitinib vs chemotherapy	IMPACT ⁶ (stage II–III)	DFS HR, 0.92 (95% CI: 0.67, 1.28); p=0.63 OS HR, 1.03 (95% CI: 0.65, 1.65); p=0.89	No significant DFS or OS benefit

**DFS 65.8 vs 28.1 months
(HR 0.27 – 95% CI 0.21-0.34)**

PHASE III ADAURA STUDY DESIGN



ADAURA updated DFS analysis^{3,4} (stage IB–IIIA)[†]
 JCO January 2023

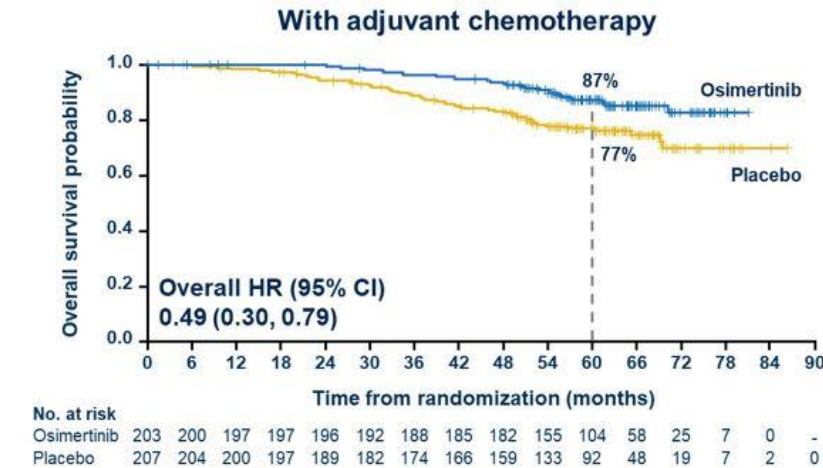
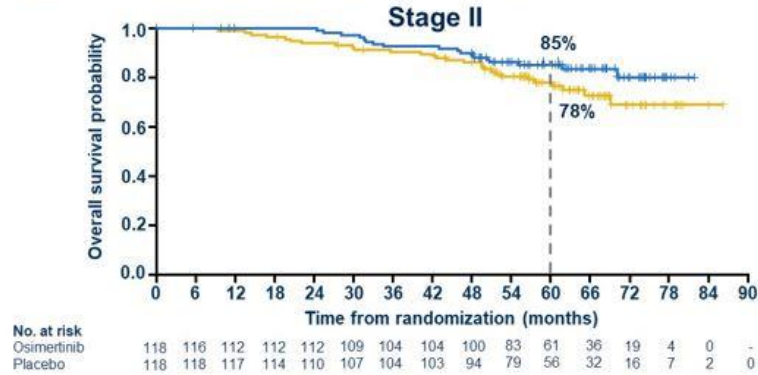
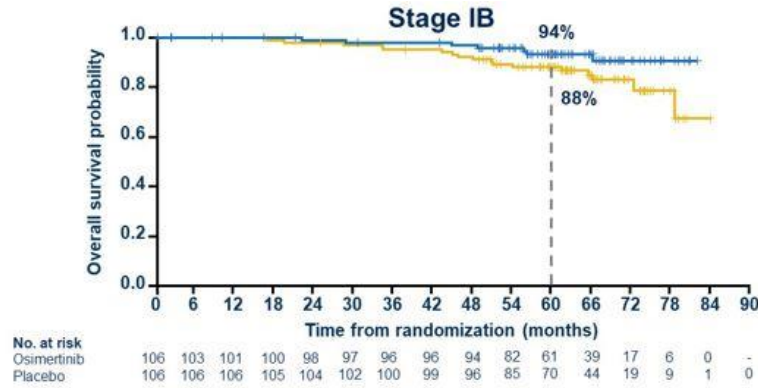


No. at risk	0	6	12	18	24	30	36	42	48	54	60	66	72
Osimertinib	339	316	307	289	278	270	249	201	139	73	33	5	0
Placebo	343	288	230	205	181	162	137	115	84	48	25	4	0

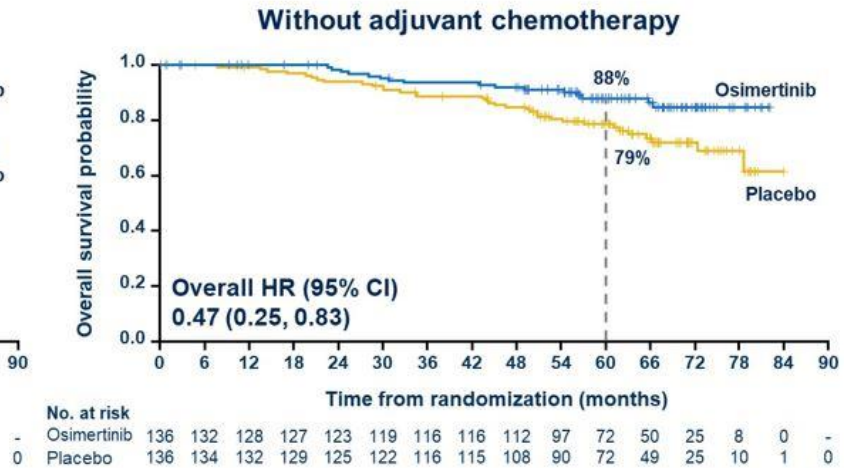
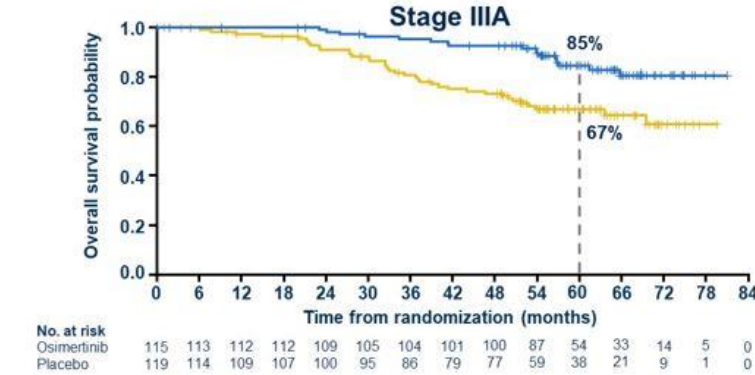
Endpoints

- Primary endpoint:** DFS by investigator assessment in stage II / IIIA patients, designed for superiority under the assumed DFS HR of 0.70
- Key secondary endpoints:** DFS in the overall population¶, DFS at 2, 3, 4, and 5 years, OS, safety, health-related quality of life
- Pre-specified exploratory endpoints:** Patterns of recurrence, time to CNS disease recurrence or death (CNS DFS)

ADAURA – OS data



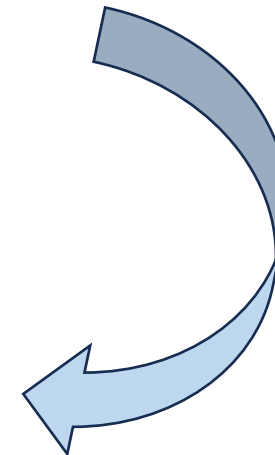
	Stage IB	Stage II	Stage IIIA
5 year OS rate, % (95% CI)			
Osimertinib	94 (86, 97)	85 (77, 91)	85 (76, 91)
Placebo	88 (80, 93)	78 (69, 85)	67 (57, 75)
Overall HR (95% CI)	0.44 (0.17, 1.02)	0.63 (0.34, 1.12)	0.37 (0.20, 0.64)



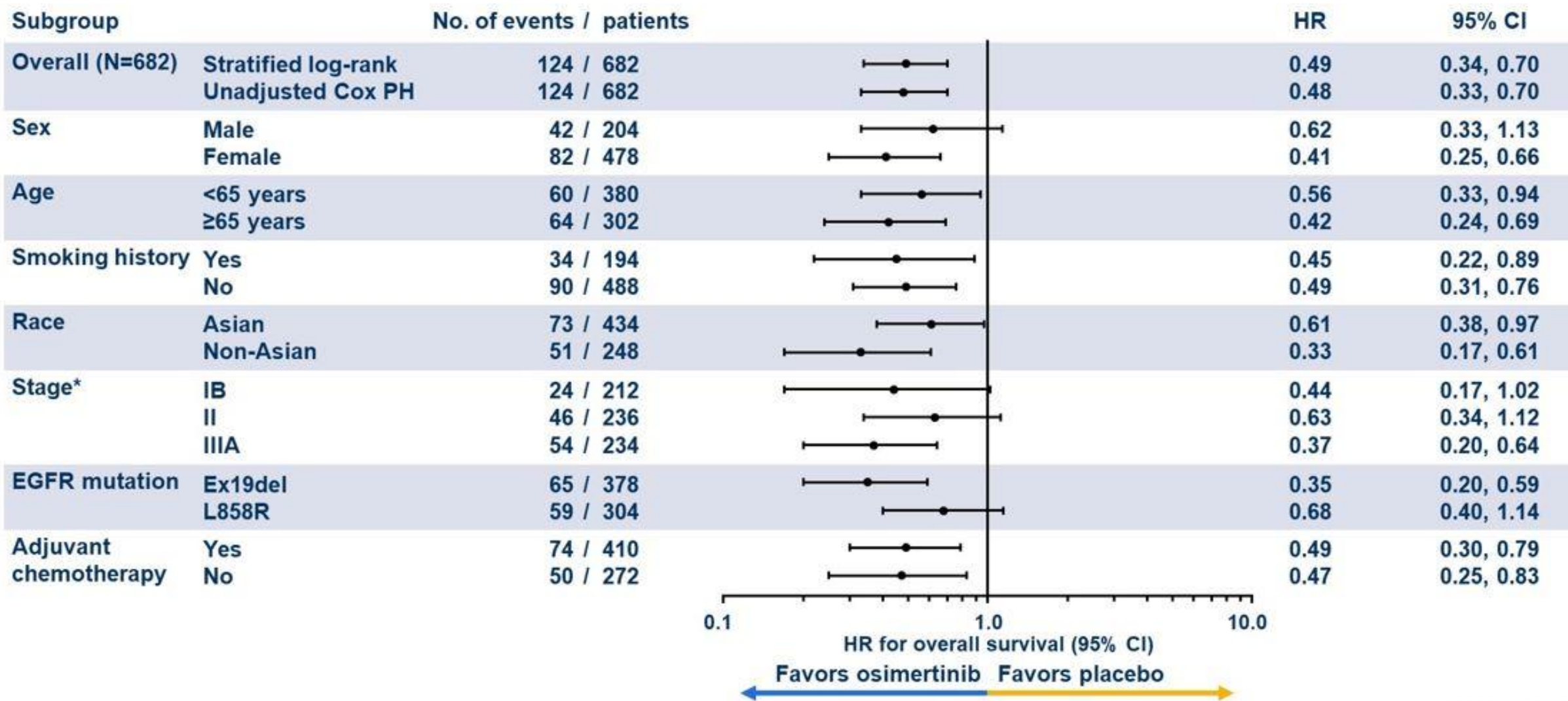
OS still immature

Significant improvement OS overall population (stage IB-III A) (HR 0.49 – 95.03% CI 0.34-0.70)

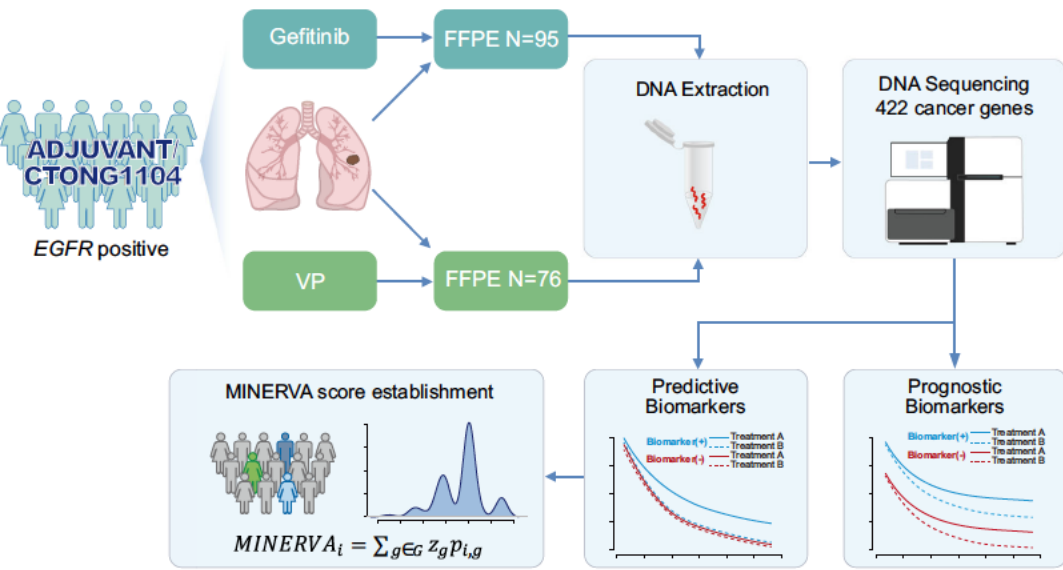
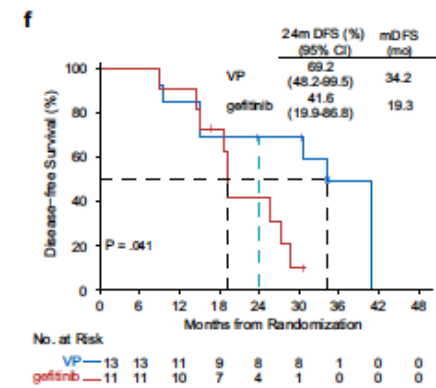
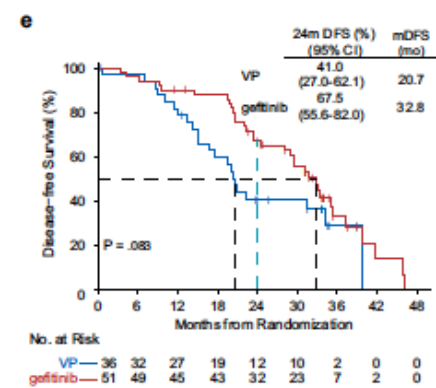
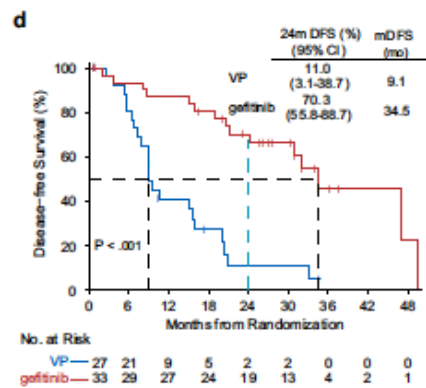
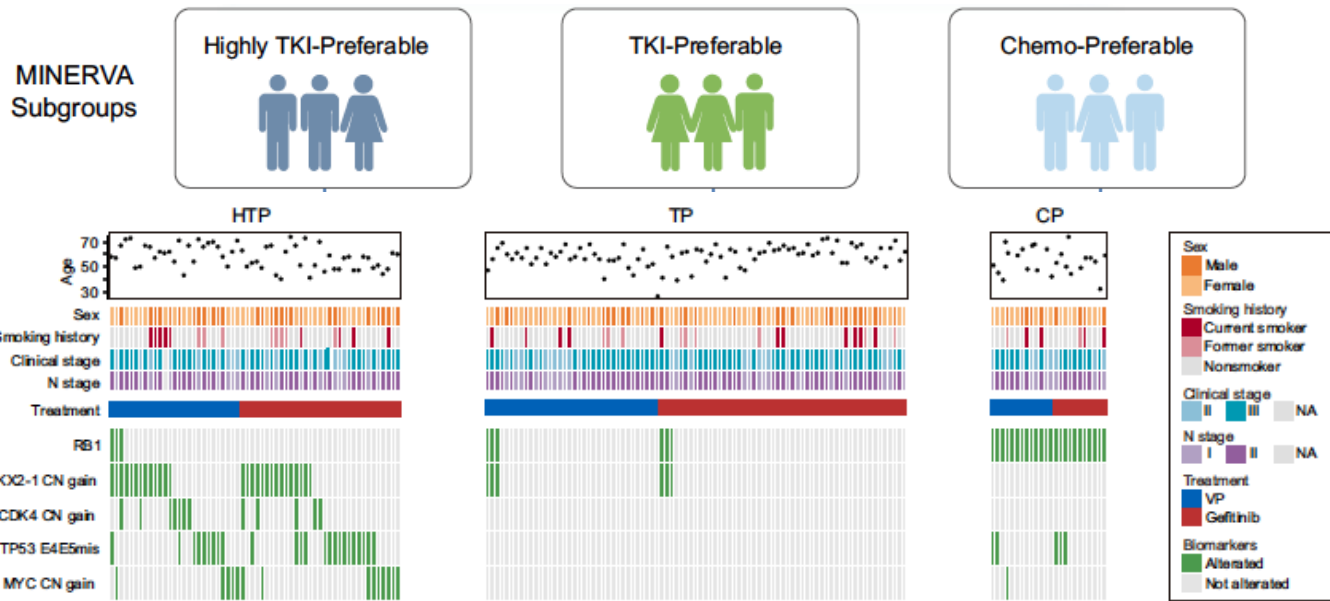
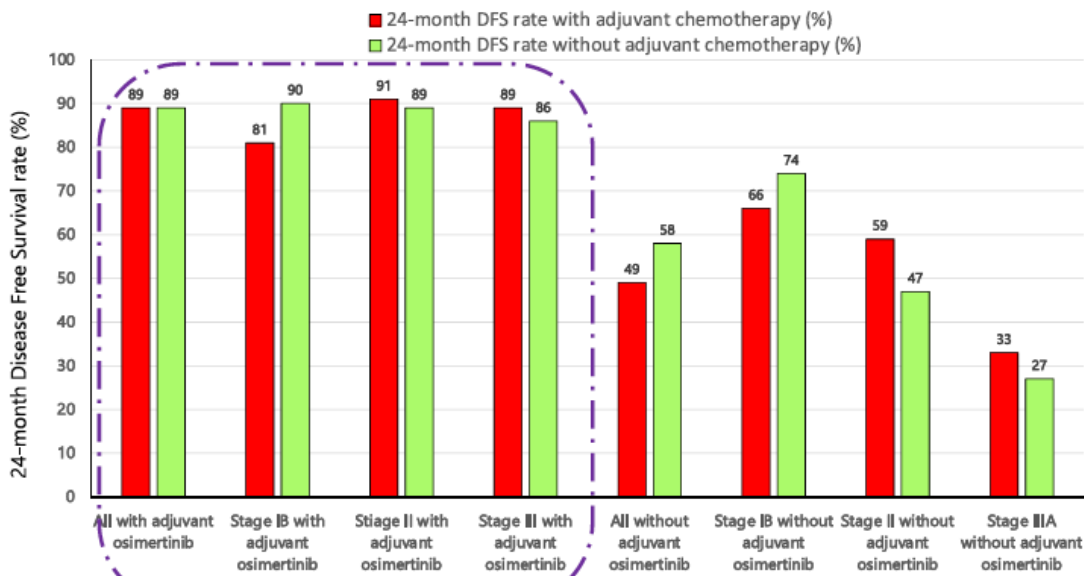
WITH or WITHOUT Chemotherapy??



ADAURA – OS data



Osimertinib W/O Chemotherapy – comutations as predictors



ADAURA – CNS DFS

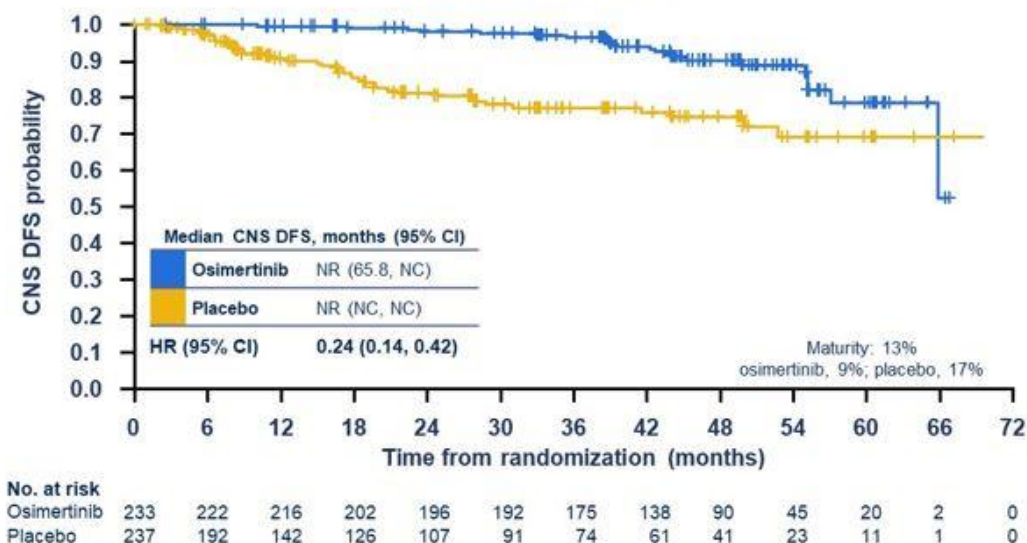
Improved CNS efficacy with osimertinib treatment



- Osimertinib has shown greater penetration of the blood-brain barrier and higher exposure in the brain compared with other EGFR-TKIs²⁻⁴
- Adjuvant osimertinib demonstrated CNS DFS* benefit vs placebo in both the stage II–IIIa and IB–IIIa populations^{5,6}

ADAURA updated CNS DFS analysis^{5,6} (stage II–IIIa)

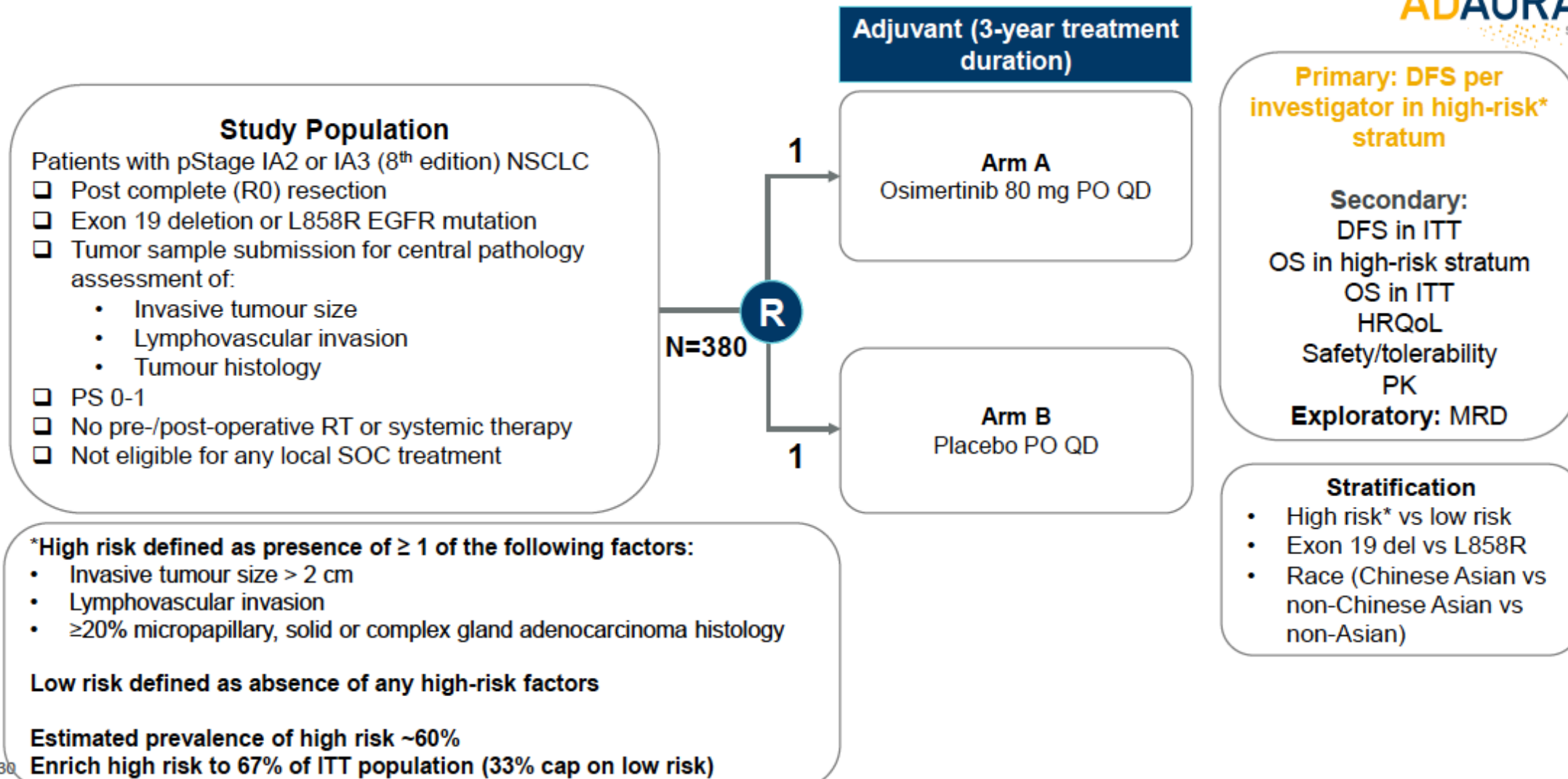
JCO January 2023



AE, any cause*, n (%)	Osimertinib (n=337)	Placebo (n=343)
Any AE	330 (98)	309 (90)
Any AE Grade ≥3	79 (23)	48 (14)
Any AE leading to death	1 (<1)	2 (1)
Any serious AE	68 (20)	47 (14)
Any AE leading to discontinuation	43 (13)	9 (3)
Any AE leading to dose reduction	42 (12)	3 (1)
Any AE leading to dose interruption	91 (27)	43 (13)
AE, possibly causally related*†, n (%)		
Any AE	308 (91)	199 (58)
Any AE Grade ≥3	36 (11)	7 (2)
Any AE leading to death	0	0
Any serious AE	10 (3)	2 (1)

Stage IA Adjuvant Phase 3 Design: ADAURA2

Adjuvant Osimertinib vs Placebo in Completely Resected Stage IA EGFRm NSCLC



MDT facing early and locally advanced resectable NSCLC

Future



Stage II-III upfront resection

cT2N0



pT2N1

Oncogene-addicted



Non oncogene-addicted



Stage II-III resectable after induction

cT4N1



Non oncogene-addicted



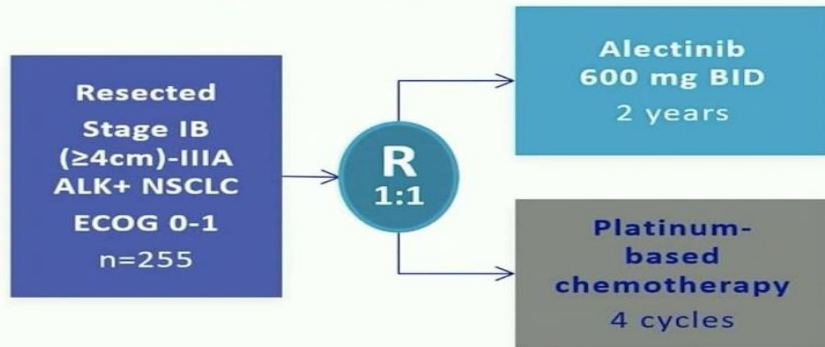
Oncogene-addicted



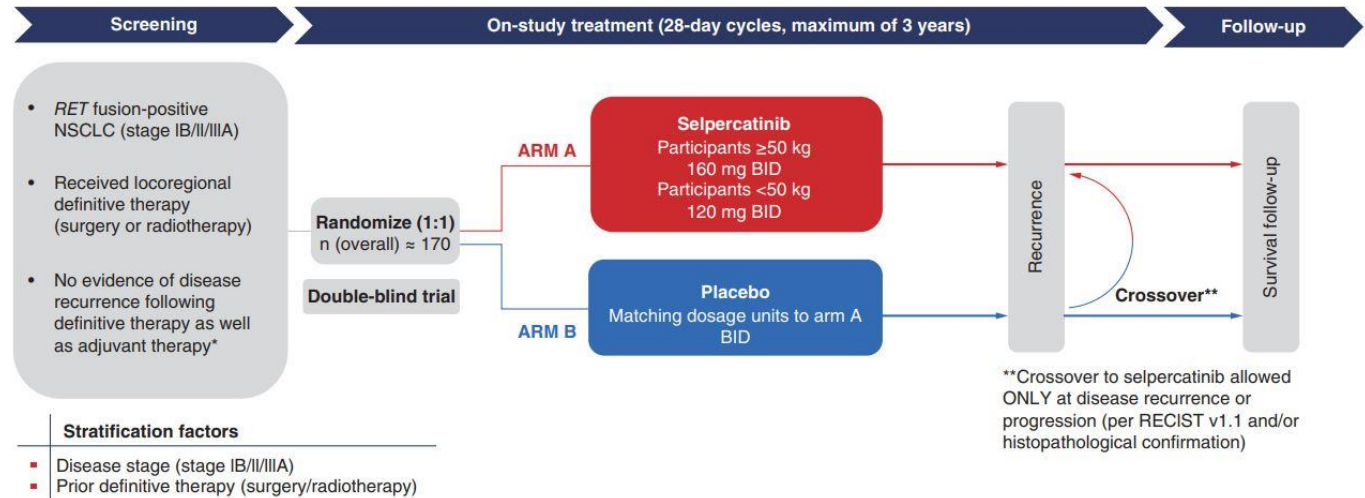
Future adjuvant option in oncogene-addicted

ALINA: ALK+ NSCLC; adjuvant setting

Adjuvant Alectinib phase 3 trial ALINA (BO40336)²



LIBRETTO 432: RET+ NSCLC; adjuvant setting



Alectinib Delivers Unprecedented Phase III Results for People With ALK-Positive Early-Stage Lung Cancer

MADRID 2023 **ESMO** congress

MADRID SPAIN
20-24 OCTOBER 2023



MDT facing early and locally advanced resectable NSCLC

Present



Stage II-III upfront resection

cT2N0



pT2N1

Oncogene-addicted



Non oncogene-addicted



Non oncogene-addicted



Oncogene-addicted



Stage II-III resectable after induction

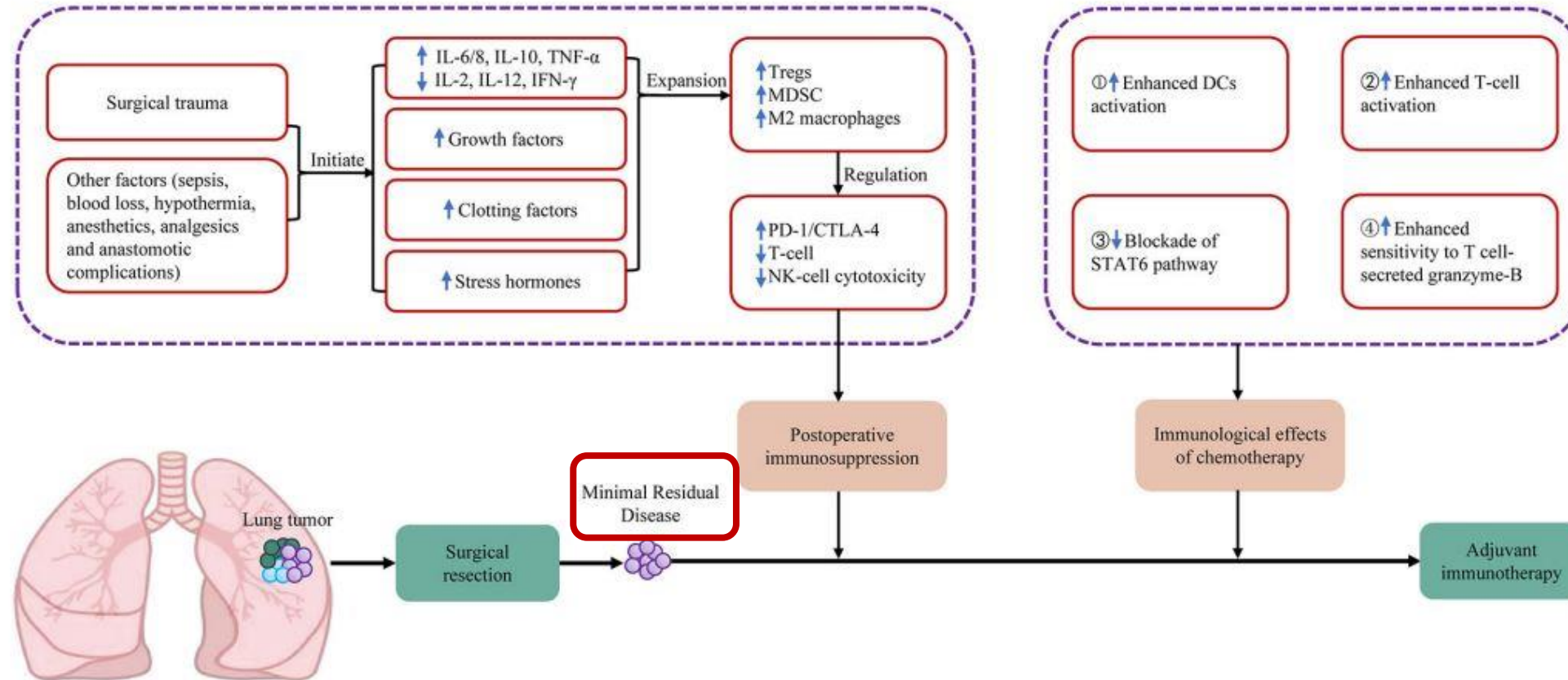
cT4N1



**Adjuvant chemo + 1y
atezolizumab in PDL1_≥50%
[EGFR and ALK neg]**

Adjuvant chemo or not + 3y
osimertinib in EGFRm+

Rationale for adjuvant chemotherapy + immunotherapy



CHEMOTHERAPY + IMMUNOTHERAPY: SINERGISTIC effect on MINIMAL RESIDUAL DISEASE

ANTIGENICITY + ADJUVANTICITY =

- 1) Activation of the innate immune system
- 2) Promotion of dendritic cell maturation
- 3) Activation of effector T cells

Clinical trials with ICIs in the adjuvant setting

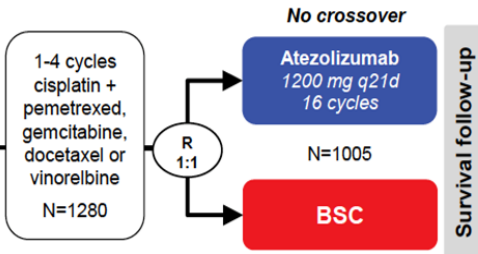
Clinical trial ^a	Adjuvant treatment		Primary end points	Disease stage
Adjuvant	IMpower 010	Platinum-doublet (mandatory) → R → Atezolizumab × 16 cycles Observation	DFS (hierarchical testing) ^d	IB(≥ 4 cm)-IIIA (seventh TNM)
	PEARLS	Platinum-doublet (optional) → R → Pembrolizumab × 18 cycles Placebo	DFS all-comers ^d DFS in PD-L1 ≥ 50%	IB(≥ 4 cm)-IIIA (seventh TNM)
	BR.31	Platinum-doublet (optional) → R → Durvalumab × 12 months Placebo	DFS in PD-L1 ≥ 25% ^d	IB(≥ 4 cm)-IIIA (seventh TNM)
	ANVIL ^{b, c}	Platinum-doublet (optional) → R → Nivolumab × 16 cycles Observation	DFS, OS ^d	IB(≥ 4 cm)-IIIA (seventh TNM)
	ACCIO ^{b, c}	→ R → Platinum-doublet × four cycles → Observation → R → Platinum-doublet × four cycles → Pembrolizumab × 16 cycles → R → Platinum-doublet plus pembrolizumab × four cycles → Pembrolizumab × 12 cycles	DFS, OS ^d	IIB-IIIB(T3N2) (eighth TNM)

IMpower 010 study



Completely resected stage IB-IIIa NSCLC per UICC/AJCC v7

- Stage IB tumours ≥ 4 cm
- ECOG PS 0-1
- Lobectomy/pneumonectomy
- Tumour tissue for PD-L1 analysis



Stratification factors

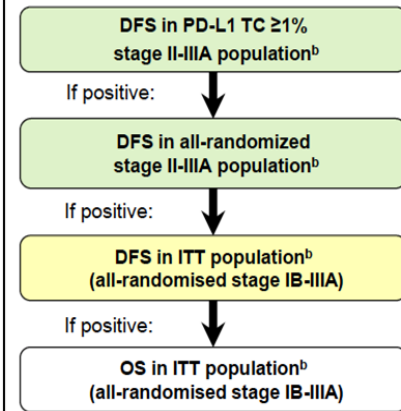
- Sex
- Stage (IB vs II vs IIIA)
- Histology
- PD-L1 tumour expression status (TC2/3 and any IC vs TC0/1 and IC2/3 vs TC0/1 and IC0/1)^a

Primary endpoints

- Investigator-assessed DFS tested hierarchically:
 1. PD-L1 TC $\geq 1\%$ (SP263) stage II-IIIa population
 2. All-randomised stage II-IIIa population
 3. ITT (all-randomised stage IB-IIIa) population
- OS in ITT (all-randomised stage IB-IIIa) population
- DFS in PD-L1 TC $\geq 50\%$ (SP263) stage II-IIIa population
- 3-y and 5-y DFS in all 3 populations

Key secondary endpoints

Hierarchical statistical testing



- Endpoint was met at DFS IA
- Endpoint was not met at DFS IA, and follow-up is ongoing
- OS data were immature, and endpoint was not formally tested

SP263 PD-L1 status

TC $\geq 50\%$	229	0.43 (0.27, 0.68)
TC $\geq 1\%$	476	0.66 (0.49, 0.87)
TC $< 1\%$	383	0.97 (0.72, 1.31)

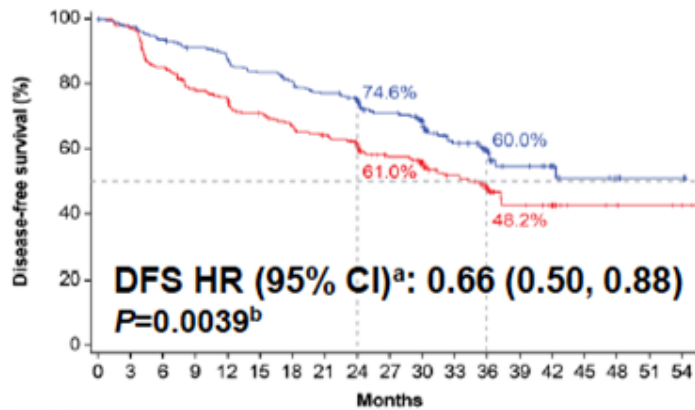
EGFR mutation status

Yes	109	0.99 (0.60, 1.62)
No	463	0.79 (0.59, 1.05)
Unknown	310	0.70 (0.49, 1.01)

ALK rearrangement status

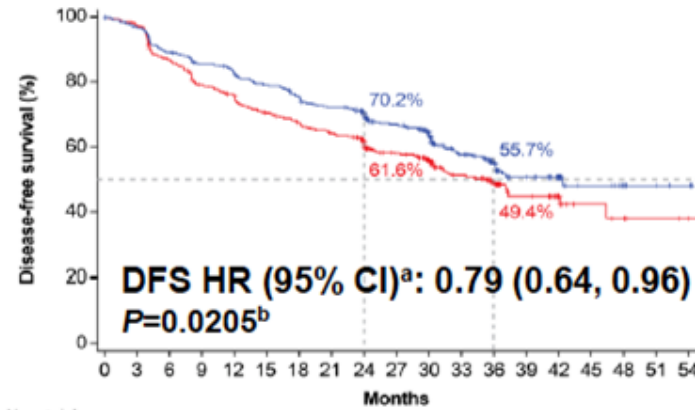
Yes	31	1.04 (0.38, 2.90)
No	507	0.85 (0.66, 1.10)
Unknown	344	0.66 (0.46, 0.93)

DFS: PD-L1 TC $\geq 1\%$ stage II-IIIa population



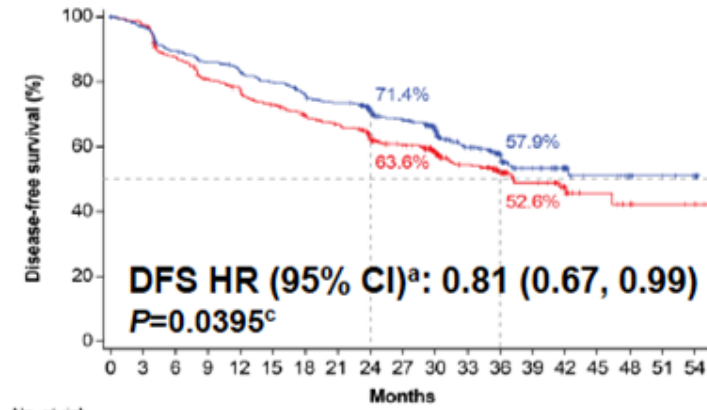
No. at risk	Atezolizumab	248	235	225	217	206	188	190	181	159	134	111	76	54	31	22	12	8	3	3
BSC	228	212	186	169	160	151	142	135	117	97	80	59	38	21	14	7	6	4	3	

DFS: All-randomised stage II-IIIa population



No. at risk	Atezolizumab	442	418	384	367	352	337	319	305	269	225	185	120	84	48	34	16	11	5	3
BSC	440	412	366	331	314	292	277	263	230	182	146	102	71	35	22	10	8	4	3	

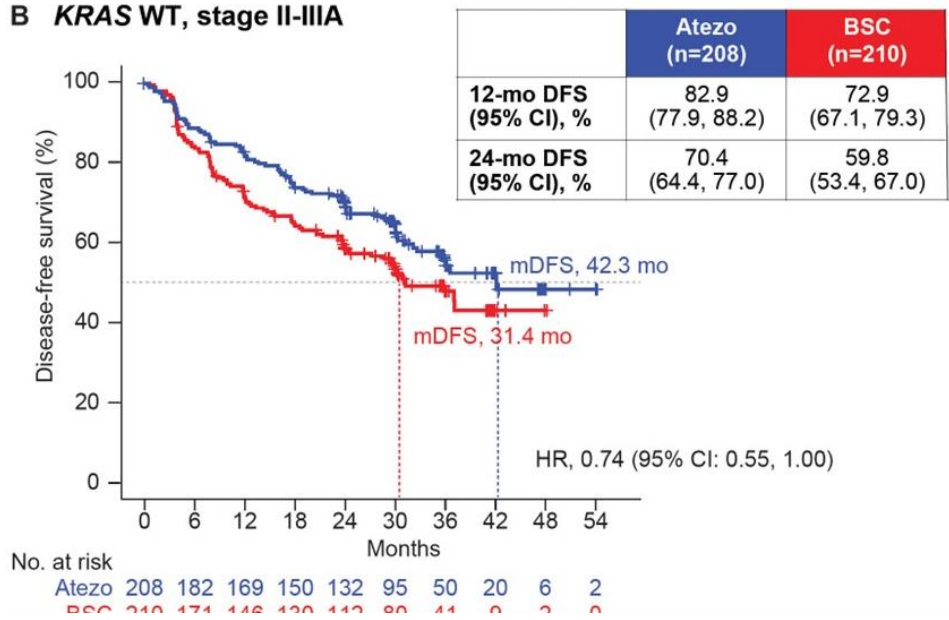
DFS: ITT (randomised stage IB-IIIa) population



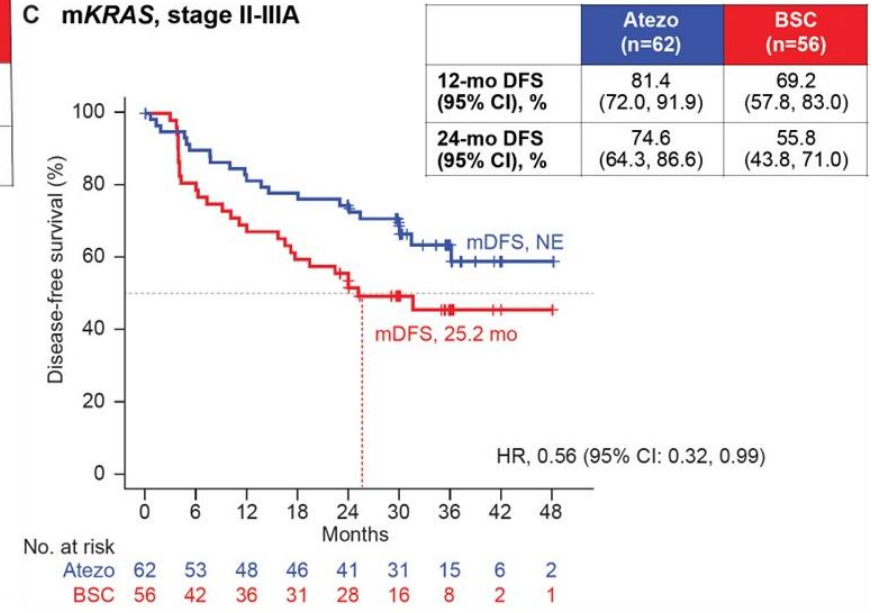
No. at risk	Atezolizumab	607	478	437	418	403	387	367	353	306	257	212	139	97	53	38	19	14	8	4
BSC	498	467	418	383	365	342	324	309	269	219	173	122	90	46	30	13	10	5	4	

IMpower 010 study: DFS by KRAS status

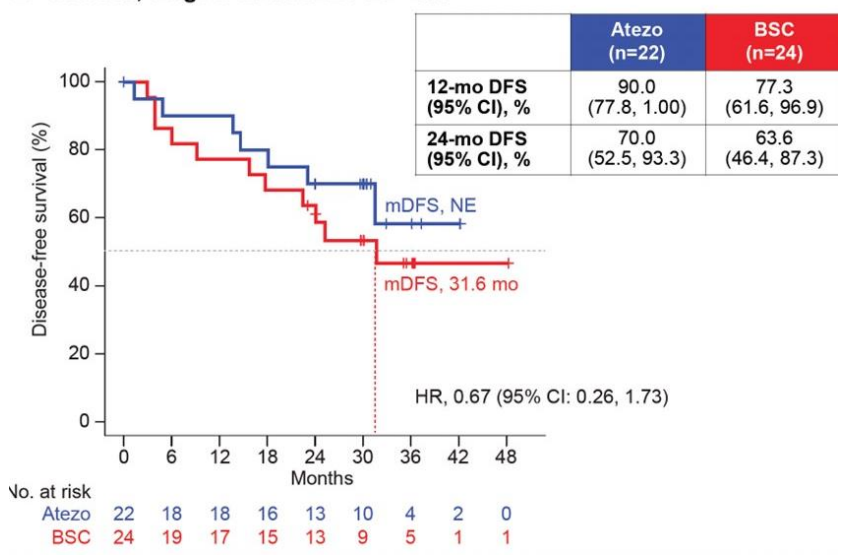
B KRAS WT, stage II-IIIa



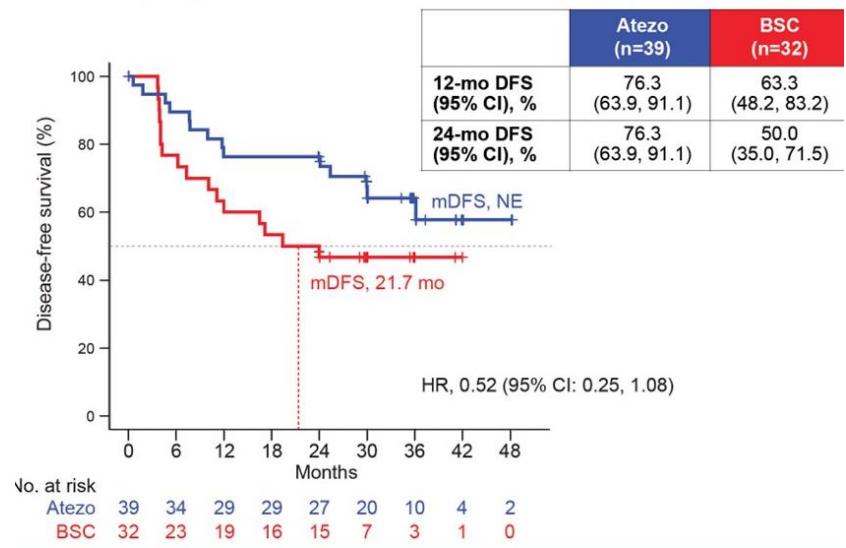
C mKRAS, stage II-IIIa



B mKRAS, stage II-IIIa: PD-L1 TC <1%



C mKRAS, stage II-IIIa: PD-L1 TC ≥ 1%



KEYNOTE 091 study

Eligibility for Registration

- Confirmed stage IB (T ≥ 4 cm), II, or IIIA NSCLC per AJCC v7
- Complete surgical resection with negative margins (R0)
- Provision of tumor tissue for PD-L1 testing

PD-L1 testing done centrally using PD-L1 IHC 22C3 pharmDx

Eligibility for Randomization

- No evidence of disease
- ECOG PS 0 or 1
- Adjuvant chemotherapy
 - Considered for stage IB (T ≥ 4 cm) disease
 - Strongly recommended for stage II and IIIA disease
 - Limited to ≤ 4 cycles

R
1:1

Pembrolizumab 200 mg Q3W for ≤ 18 administrations (~1 yr)

Placebo Q3W for ≤ 18 administrations (~1 yr)

Stratification Factors

- Disease stage (IB vs II vs IIIA)
- PD-L1 TPS (<1% vs 1-49% vs ≥50%)
- Receipt of adjuvant chemotherapy (yes vs no)
- Geographic region (Asia vs Eastern Europe vs Western Europe vs rest of world)

Dual Primary End Points

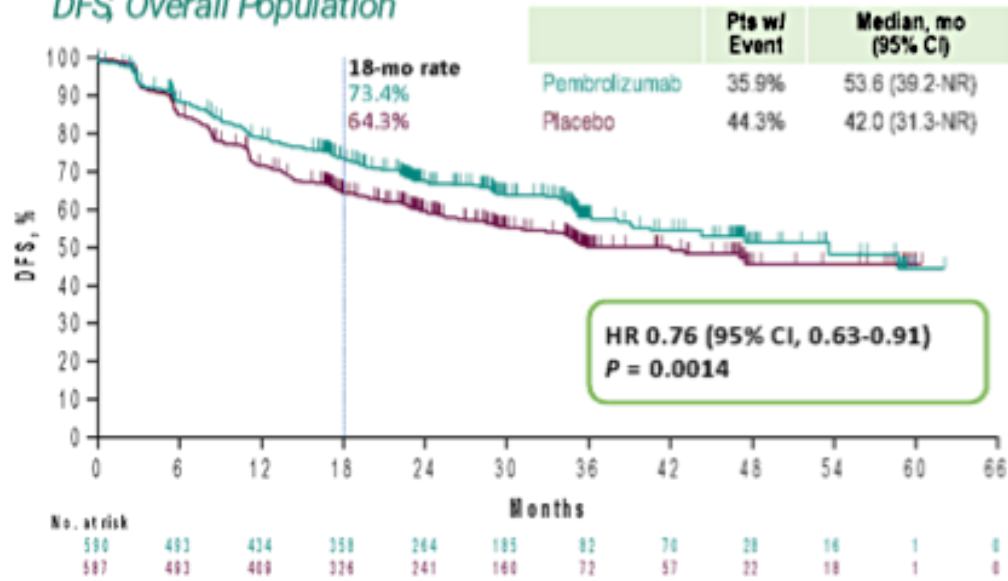
- DFS in the overall population
- DFS in the PD-L1 TPS ≥ 50% population

Secondary End Points

- DFS in the PD-L1 TPS ≥ 1% population
- OS in the overall, PD-L1 TPS ≥ 50%, and PD-L1 TPS ≥ 1% populations
- Lung cancer-specific survival in the overall population
- Safety

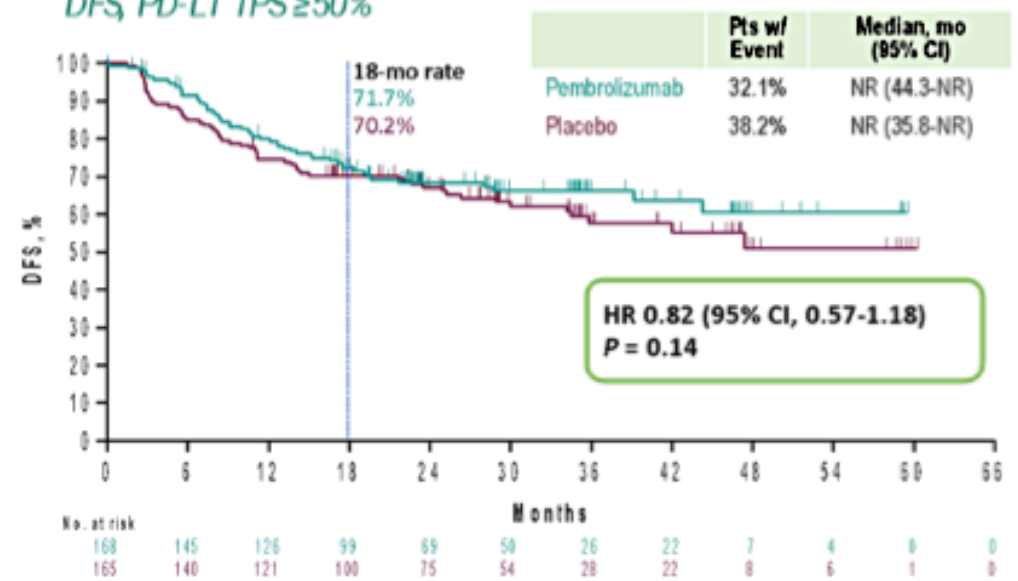
No significant DFS benefit
Placebo overperformance?

DFS, Overall Population



Response assessed per RECIST v1.1 by investigator review.
Data cutoff date: September 20, 2021.

DFS, PD-L1 TPS ≥ 50%

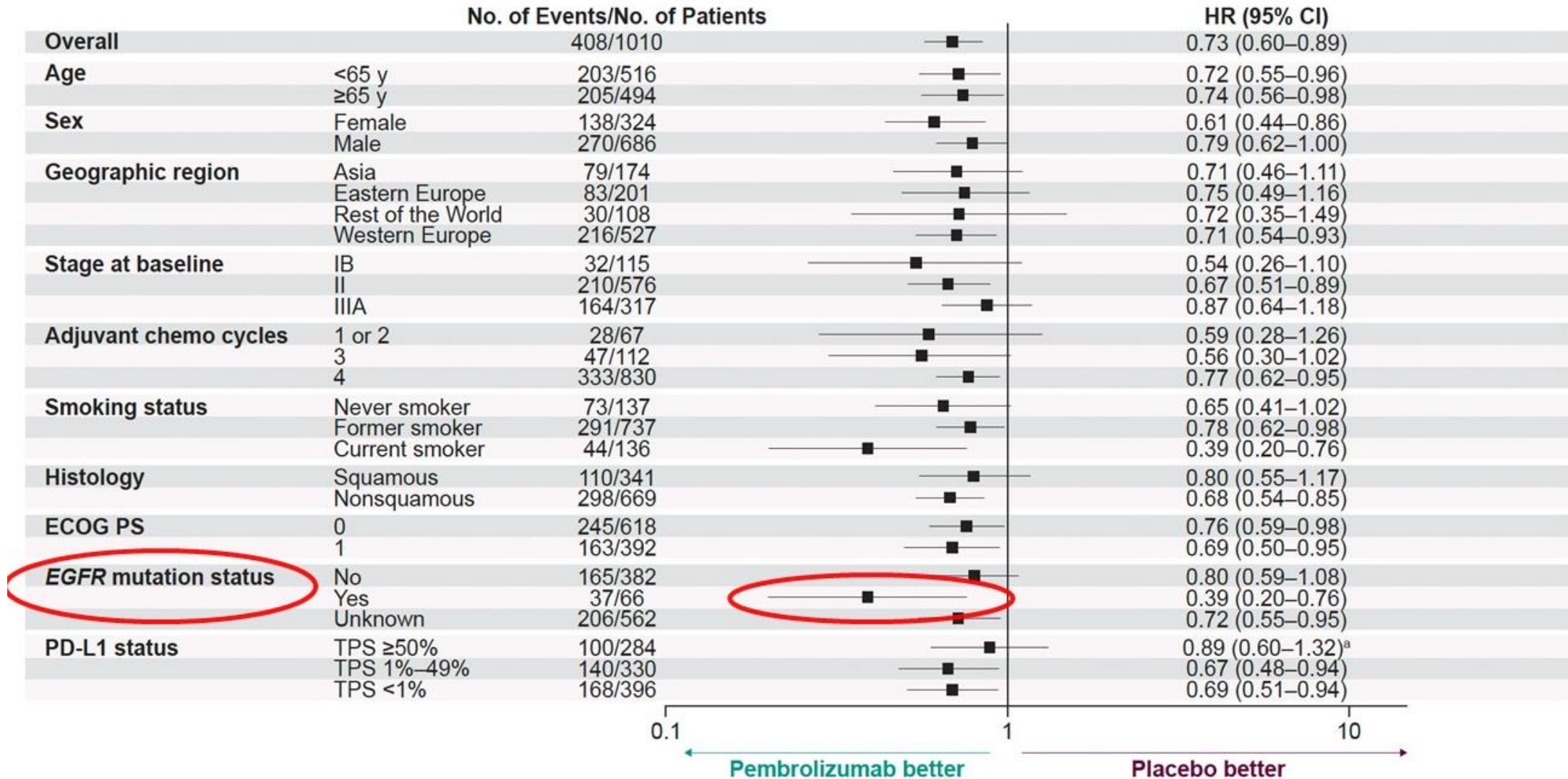


Response assessed per RECIST v1.1 by investigator review.
Data cutoff date: September 20, 2021.

KEYNOTE091 and IMpower-010

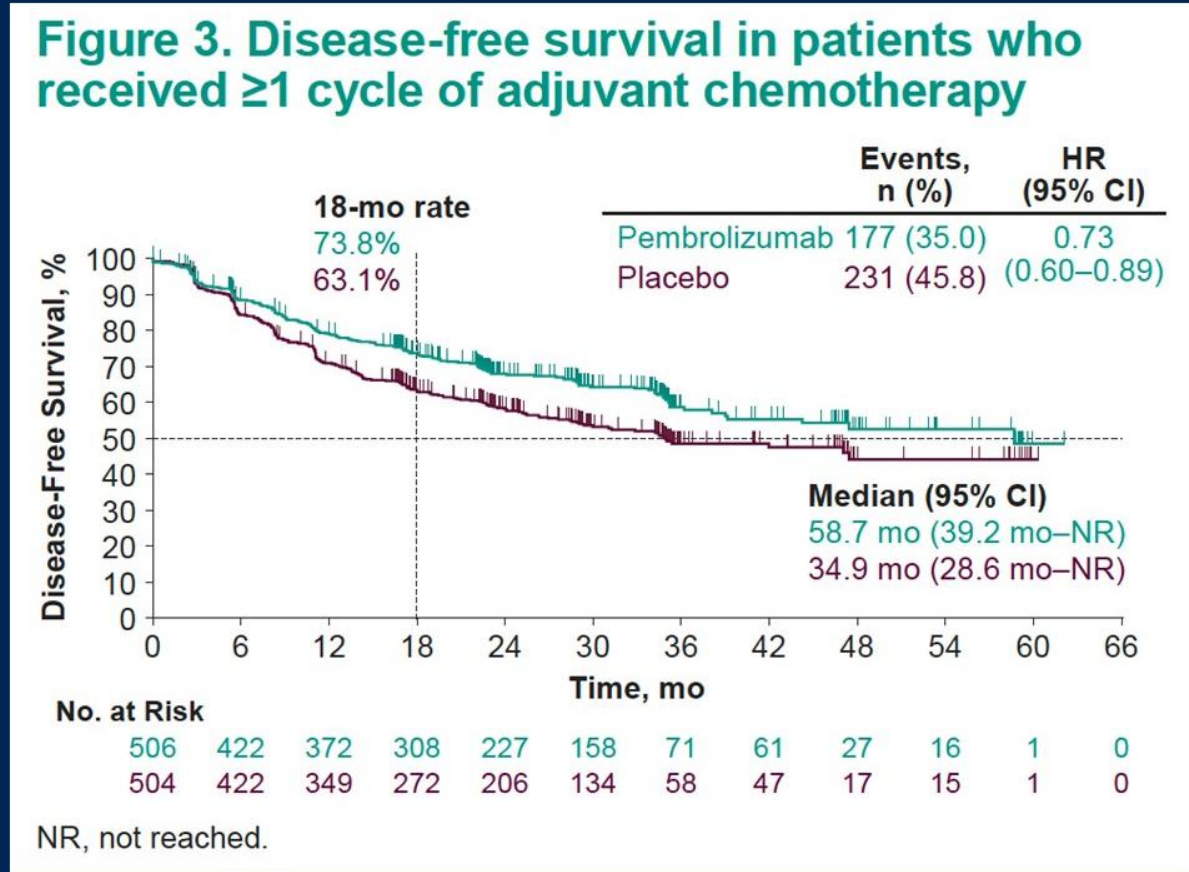
	IMpower010	PEARLS/Keynote 091
Control Arm	Observation (open-label)	Placebo ★
Description	Global, open label	ETOP/EORTC placebo controlled
Primary endpoint	Hierarchical testing DFS pII-IIIa PD-L1≥1% DFS pII-IIIa; all comers DFS pIB-IIIa; all comers OS	Co-primary endpoints (dual-testing) DFS pIB-IIIa; all comers DFS pIB-IIIa; PD-L1≥50%
Randomized patients	1280	1177
Stratification Factors	Sex / Tumor histology / Stage / PD-L1 expression	Stage / CT adjuvant / PD-L1 expression
Stage pIB / II / IIIa (7 th)	11.8% / 46.7% / 41.1%	14.3% / 56.7% / 28.8%
PD-L1 distribution	<1% / ≥1%: 44% / 53.5%	<1% / 1-49% / ≥50%: 39.5% / 32.3% / 28.3%
Adjuvant CT	1-4 Cisplatin-based cycles	Recommended for stage pII/IIIa, (Carboplatin allowed)
Design / Compliance	Atezolizumab post-CT / 65% ★	Pembrolizumab post-CT / 48%
Follow up, months	46	35.6
Primary endpoint: DFS	<ul style="list-style-type: none"> •pII-IIIa, PD-L1≥1%: HR 0.66 (0.50, 0.88) •pII-IIIa: HR 0.79 (0.64, 0.96) ★ •ITT pIB-IIIa: 0.81 (0.67, 0.99) 	<ul style="list-style-type: none"> •pIB-IIIa: HR 0.76 (0.63, 0.91) •pIB-IIIa, PD-L1≥50%: HR 0.82 (0.57, 1.18)
Approval	<ul style="list-style-type: none"> •FDA: PD-L1+ (TC ≥1%) Stage II-IIIa •EMA: PD-L1+ (TC ≥50%) with EGFR / ALK - ★ 	<ul style="list-style-type: none"> •FDA: Stage IB (T ≥4 cm), II or IIIa •EMA: not approved yet

KN091 study: subset analysis in pts receiving adjuvant chemotherapy



^aFor the PD-L1 TPS ≥50% subgroup, HR for DFS by multivariate Cox regression model with treatment adjusted by stratification factors, histology (squamous vs nonsquamous), and smoking status (never vs former/current) was 0.80 (95% CI, 0.54–1.20).

KN091 study: subset analysis in pts receiving adjuvant chemotherapy



- 1010 out of 1178 (86%) randomized patients received > 1 cycle of adjuvant chemotherapy
- No major differences in baseline characteristics between Pembro and placebo groups for this patient subset

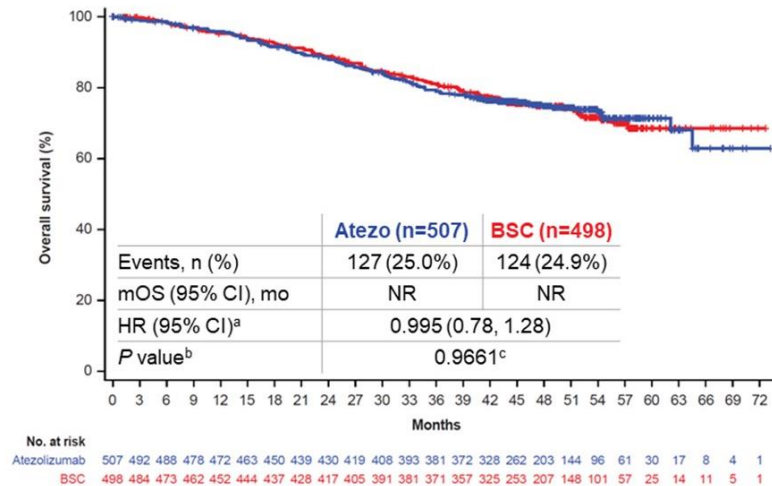
Oselin K et al, Abstract # 8520

Adjuvant immunotherapy: open questions

- Number of chemo cycles?
- Type of chemo regimen?
- Patients selection and treatment duration
- Survival benefit

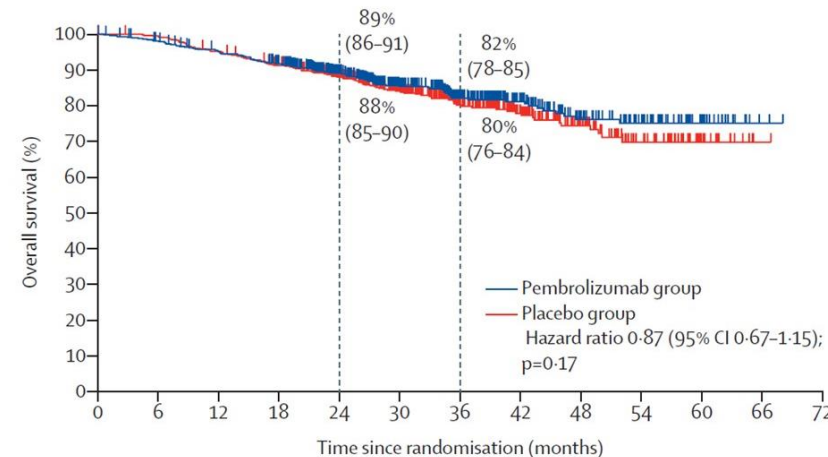
	IMpower010 Atezolizumab vs. BSC	KN091 Pembrolizumab vs. placebo
All G AEs	92.5% vs. 70.9%	95.9 vs. 91%
AEs G \geq 3	23.8% vs. 0.6%	34.1% vs. 25.8%

IMpower 010
ITT population stage IB-III A



Median Follow Up: 45 months (interim analysis)

KEYNOTE-091/PEARLS



Median Follow Up: 35.6 months (interim analysis)

Patient's selection for adjuvant NSCLC

Relapse risk prevention
Survival improvement
CURE



Stage
Histological features
Age
Comorbidities
Performance Status
Recovery from surgery
Quality of life
Risk of toxicity
Compliance
Patient's preference



Reasons for not receiving adjuvant chemotherapy¹

Declined by patient (12.6%)

Comorbidities (11.9%)

Complication or delay in surgery recovery (8.4%)

Poor performance status (7.0%)

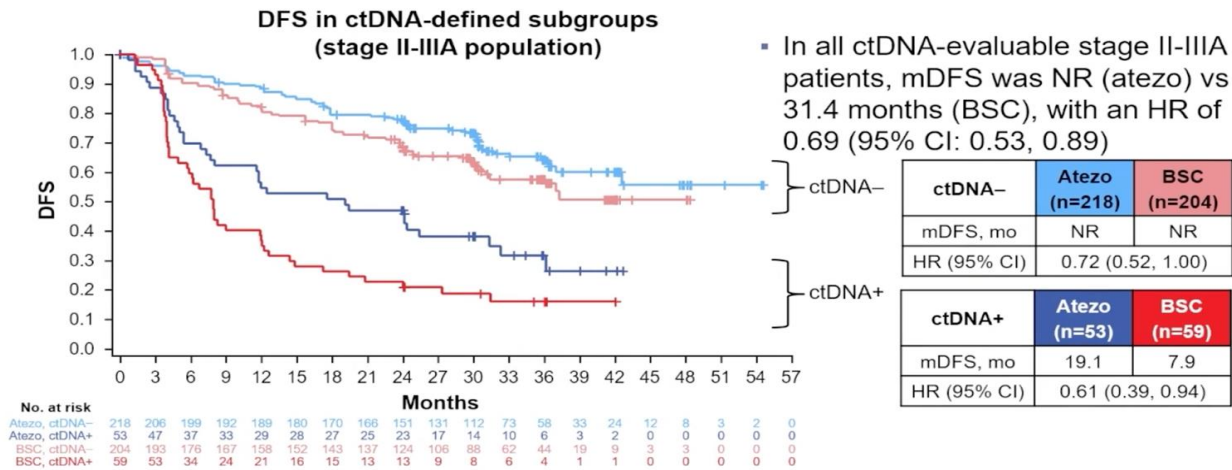
52% did not receive adjuvant chemotherapy

Retrospective analysis of 831 French, German, and UK patients with complete resection of stage IB-IIIa^a NSCLC

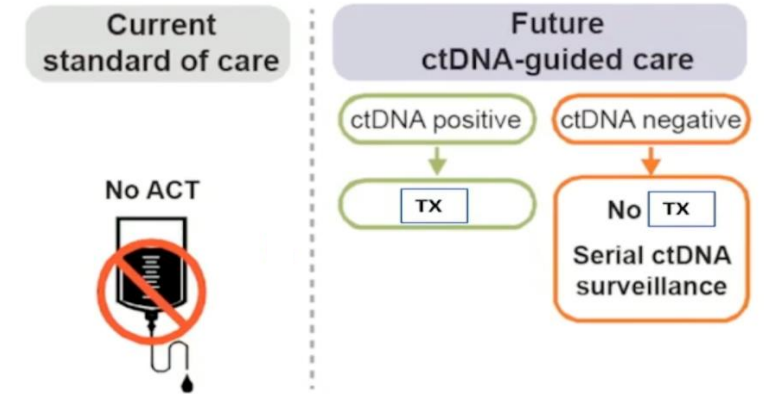
Patient's selection for adjuvant chemotherapy is the key point: a cumulative dose intensity of 300 mg/sm should be administered. Early interruption of adjuvant chemo translate into a worse prognosis and a delay of subsequent adjuvant strategies

Adjuvant immunotherapy: the role of MRD

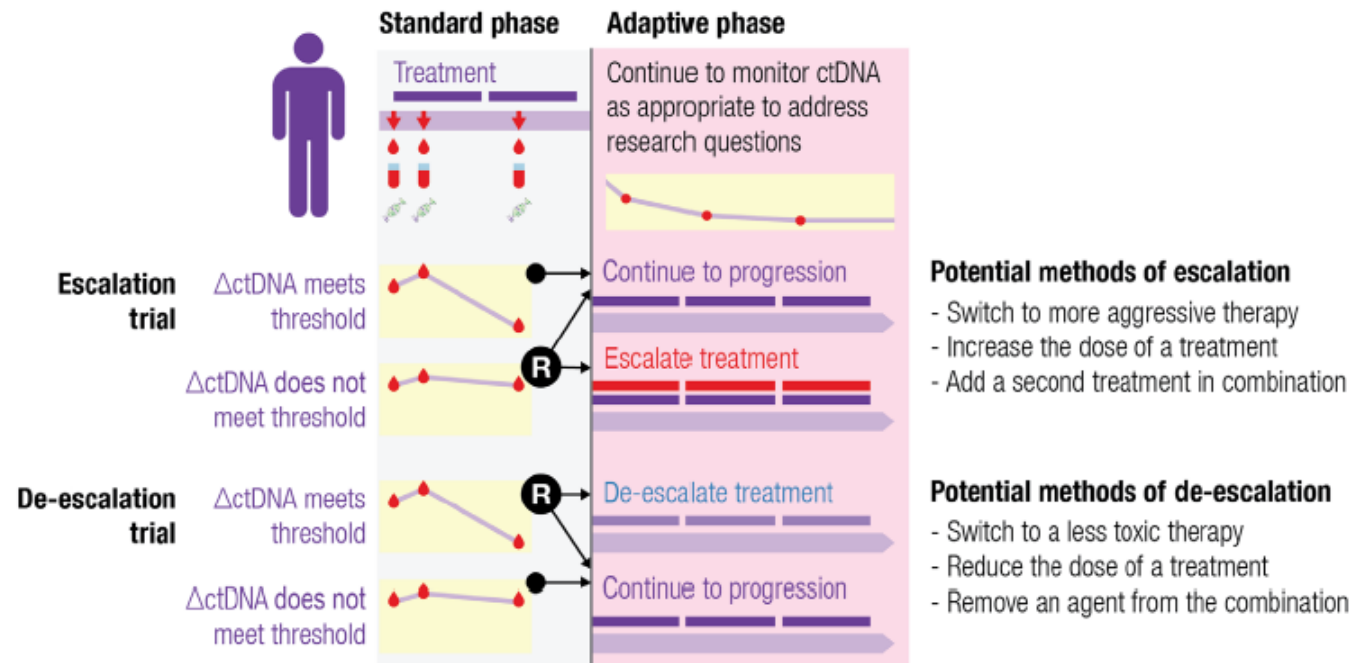
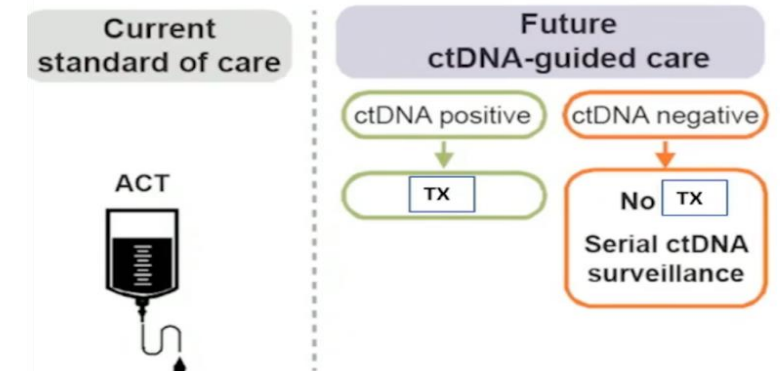
Impower 010 – Exploratory results for ctDNA



Low Risk Patients



High Risk Patients



MDT facing early and locally advanced resectable NSCLC

Future



Stage II-III upfront resection

cT2N0



pT2N1

Oncogene-addicted

Non oncogene-addicted



Stage II-III resectable after induction

cT4N1



Non oncogene-addicted

Oncogene-addicted



- **NEOADAURA**
- **ALNEO**

- **CM816**
- **KN671**
- **AEGEAN**
- **NEOTORCH**
- **CM77T**
- **RATIONALE315**
- **NCT05157776**

9th edition TNM proposal

T

→ No changes

N

→ Split in N2a and N2b

M

→ Split in M1c1 and M1c2

Proposed 9 th Edition N-categories			9 th Edition
NX		Regional lymph nodes cannot be assessed	No changes
N0		No regional lymph node metastasis	No changes
N1		Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension	No changes
N2		Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)	Subdivided
N2a		Single N2 station involvement	
N2b		Multiple N2 station involvement	
N3		Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)	No changes

Proposed 9 th Edition M-categories			9 th Edition
M0		No distant metastasis	No changes
M1		Distant metastasis	No changes
M1a		Separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural or pericardial effusion. Most pleural (pericardial) effusions with lung cancer are due to tumor. In a few patients, however, multiple microscopic examinations of pleural (pericardial) fluid are negative for tumor, and the fluid is non-bloody and is not an exudate. Where these elements and clinical judgment dictate that the effusion is not related to the tumor, the effusion should be excluded as a staging descriptor.	No changes
M1b		Single extrathoracic metastasis in a single organ and involvement of a single distant (non-regional) node	No changes
M1c1		Multiple extrathoracic metastases in a single organ system	Subdivided
M1c2		Multiple extrathoracic metastases in multiple organ systems	Subdivided

8 th Ed Categories					Proposed 9 th Ed TNM Categories						
T/M	Label	N0	N1	N2	N3	T/M	Label	N1	N2	N3	
T1	T1a	IA1	IIB	IIIA	IIIB	T1	T1a ≤1 cm	IA1	IIB	IIIA	IIIB
	T1b	IA2	IIB	IIIA	IIIB	T1	T1b >1 to ≤2 cm	IA2	IIB	IIIA	IIIB
	T1c	IA3	IIB	IIIA	IIIB	T1	T1c >2 to ≤3 cm	IA3	IIB	IIIA	IIIB
T2	T2a	IB	IIB	IIIA	IIIB	T2	T2a	IB	IIB	IIIA	IIIB
	T2a >3-4	IB	IIB	IIIA	IIIB	T2	T2a >3 to ≤4 cm	IB	IIB	IIIA	IIIB
	T2b >4-5	IIA	IIB	IIIA	IIIB	T2	T2b >4 to ≤5 cm	IIA	IIB	IIIA	IIIB
T3	T3 >5-7	IIIB	IIIA	IIIB	IIIC	T3	T3 >5 to ≤7 cm	IIIB	IIIA	IIIB	IIIC
	T3 Inv	IIIB	IIIA	IIIB	IIIC	T3	T3 Invasion	IIIB	IIIA	IIIB	IIIC
	T3 Sat	IIIB	IIIA	IIIB	IIIC	T3	T3 Satellite nodules	IIIB	IIIA	IIIB	IIIC
T4	T4 > 7	IIIA	IIIA	IIIB	IIIC	T4	T4 > 7 cm	IIIA	IIIA	IIIB	IIIC
	T4 Inv	IIIA	IIIA	IIIB	IIIC	T4	T4 Invasion	IIIA	IIIA	IIIB	IIIC
	T4 Ipsi Nod	IIIA	IIIA	IIIB	IIIC	T4	T4 Ipsilateral nodules	IIIA	IIIA	IIIB	IIIC
M1	M1a Contr Nod	IVA	IVA	IVA	IVA	M1	M1a Contralateral nodules	IVA	IVA	IVA	IVA
	M1a Pleur	IVA	IVA	IVA	IVA	M1	M1a Pleural, pericardial effusion	IVA	IVA	IVA	IVA
	M1b Single Lesion	IVA	IVA	IVA	IVA	M1	M1b Single Extrathoracic Lesion	IVA	IVA	IVA	IVA
	M1c Multiple Lesions	IVB	IVB	IVB	IVB	M1	M1c1 Mult. Lesions, Single Organ system	IVB	IVB	IVB	IVB
						M1c2 Mult. Lesions, Mult. Organ systems	IVB	IVB	IVB	IVB	

Today
T1N1 → Stage IIB
T1N2 → Stage IIIA

Future
T1N1 → Stage IIA
T1N2a → Stage IIB
T1N2b → Stage IIIA



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