

IMpassion130: Results from a global, randomised, double-blind, Phase III study of atezolizumab + *nab*-paclitaxel vs placebo + *nab*-paclitaxel in treatment-naïve locally advanced or metastatic triple-negative breast cancer

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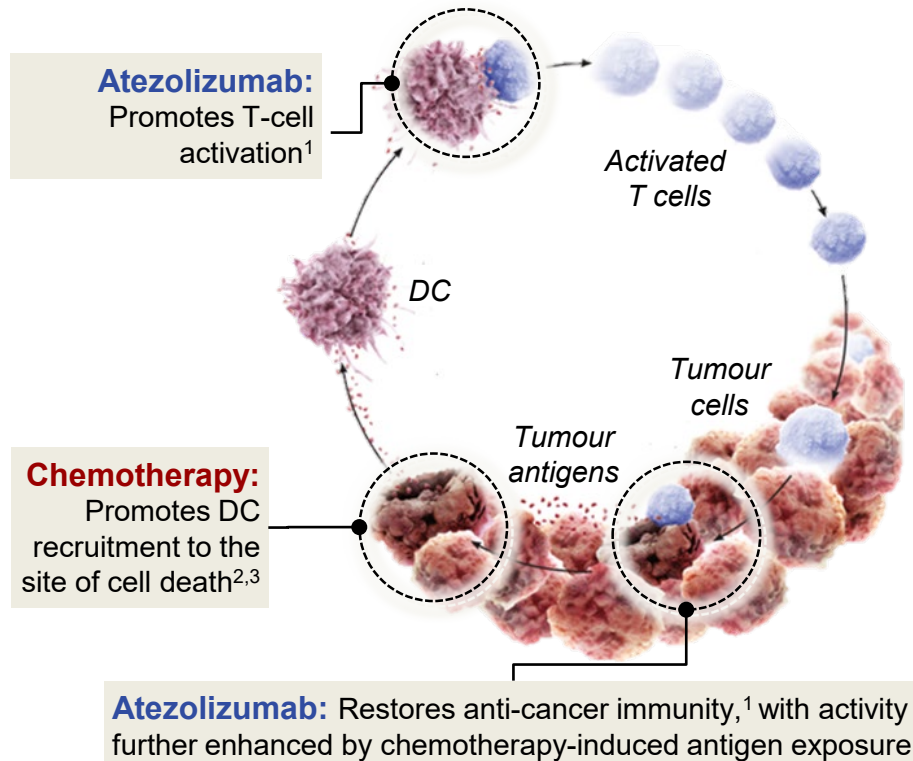
Disclosures

- ◆ Dr Peter Schmid has the following financial relationships to disclose:
 - Grants, support of parent study, and funding of editorial support from F. Hoffmann-La Roche during the conduct of the study
 - Grants and research support to institution from AstraZeneca, Roche/Genentech, Oncogenex, Novartis, Astellas outside this study
 - Honoraria from Pfizer, AstraZeneca, Novartis, Roche, Merck, Boehringer Ingelheim, Bayer, Eisai, Celgene and Puma outside this study
 - Uncompensated steering committee member for the IMpassion130 trial
 - Spouse is an employee of Roche

Triple-negative breast cancer (TNBC)

- ◆ Patients with advanced or metastatic TNBC experience poor outcomes relative to patients with other breast cancer subtypes,¹ with a median OS of \approx 18 months or less²⁻⁴
- ◆ First-line treatment typically includes single-agent taxane or anthracycline chemotherapy^{5,6}
- ◆ No targeted therapies have improved OS to date
- ◆ Checkpoint inhibition may be a useful approach in the treatment of TNBC
 - PD-L1 can inhibit anti-cancer immune responses⁷
 - PD-L1 in TNBC is expressed mainly on tumour-infiltrating immune cells (IC)^{8,9}

Atezolizumab and chemotherapy



- Atezolizumab (anti-PD-L1) monotherapy is approved in the United States, Europe and elsewhere for certain types of metastatic urothelial carcinoma and lung cancer⁴
- In a Phase I study, atezolizumab monotherapy was active in multiple cancers, including TNBC,^{5,6} with greater activity in patients whose tumours had PD-L1 IC $\geq 1\%$ ⁶
- The addition of chemotherapy can enhance atezolizumab's anti-tumour activity^{7,8}
 - In a Phase Ib study in mTNBC, concurrent administration of *nab*-paclitaxel did not inhibit atezolizumab-mediated immunodynamic effects⁸

DC, dendritic cell.

1. Chen *Immunity* 2013. 2. Zitvogel *Immunity* 2013. 3. Emens *CIR* 2015. 4. TECENTRIQ US PI/SmPC 2018. 5. Herbst *Nature* 2014. 6. Emens *JAMA Oncol* 2018. 7. Jotte ASCO 2018. 8. Pohlmann AACR 2018.

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 ESMO 2018 (LBA1_PR)
<http://bit.ly/2DMhayg>

IMpassion130 study design

Key IMpassion130 eligibility criteria^a:

- Metastatic or inoperable locally advanced TNBC
 - Histologically documented^b
- No prior therapy for advanced TNBC
 - Prior chemo in the curative setting, including taxanes, allowed if TFI ≥ 12 mo
- ECOG PS 0-1

Stratification factors:

- Prior taxane use (yes vs no)
- Liver metastases (yes vs no)
- PD-L1 status on IC (positive [≥ 1%] vs negative [$< 1\%$])^c

R
1:1

Atezo + nab-P arm:

- Atezolizumab 840 mg IV
- On days 1 and 15 of 28-day cycle
- + nab-paclitaxel 100 mg/m² IV**
- On days 1, 8 and 15 of 28-day cycle

Double blind; no crossover permitted

Plac + nab-P arm:

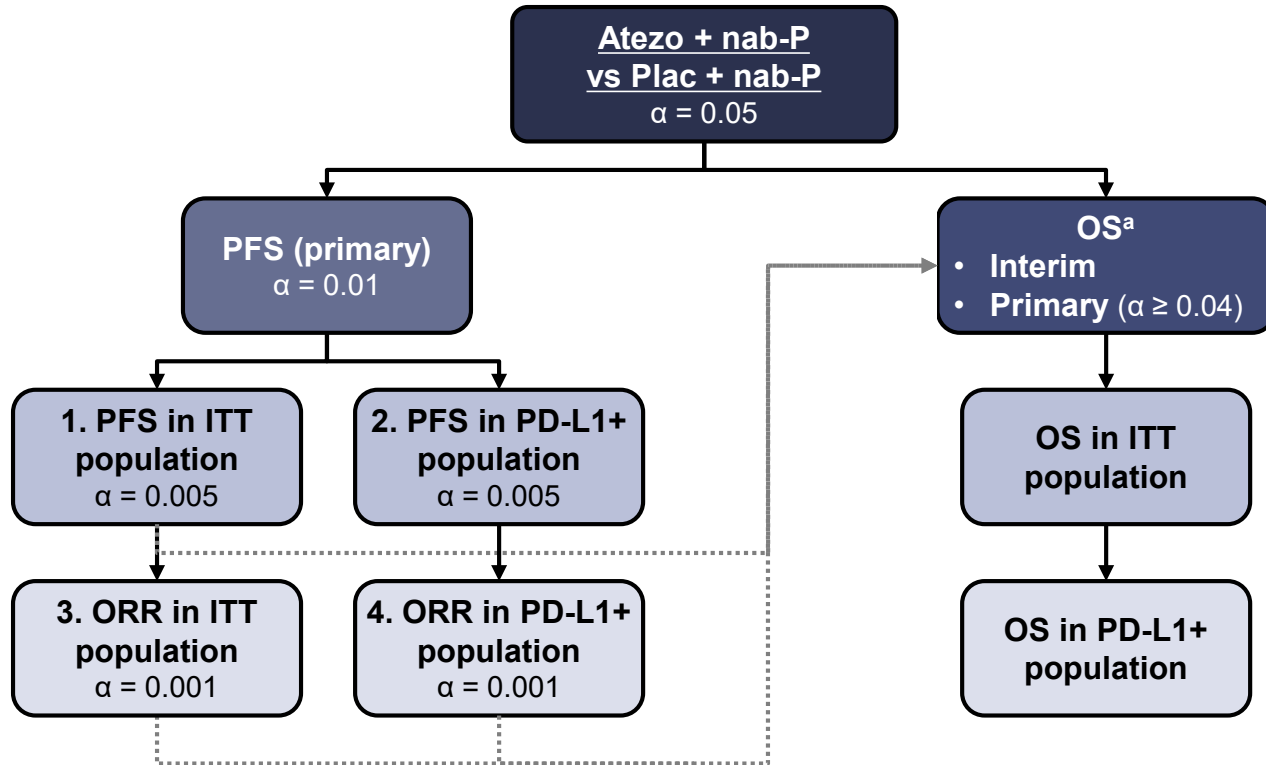
- Placebo IV
- On days 1 and 15 of 28-day cycle
- + nab-paclitaxel 100 mg/m² IV**
- On days 1, 8 and 15 of 28-day cycle

RECIST v1.1
PD or toxicity

- Co-primary endpoints were PFS and OS in the ITT and PD-L1+ populations^d
 - Key secondary efficacy endpoints (ORR and DOR) and safety were also evaluated

IC, tumour-infiltrating immune cell; TFI, treatment-free interval. ^a ClinicalTrials.gov: NCT02425891. ^b Locally evaluated per ASCO–College of American Pathologists (CAP) guidelines. ^c Centrally evaluated per VENTANA SP142 IHC assay (double blinded for PD-L1 status). ^d Radiological endpoints were investigator assessed (per RECIST v1.1).

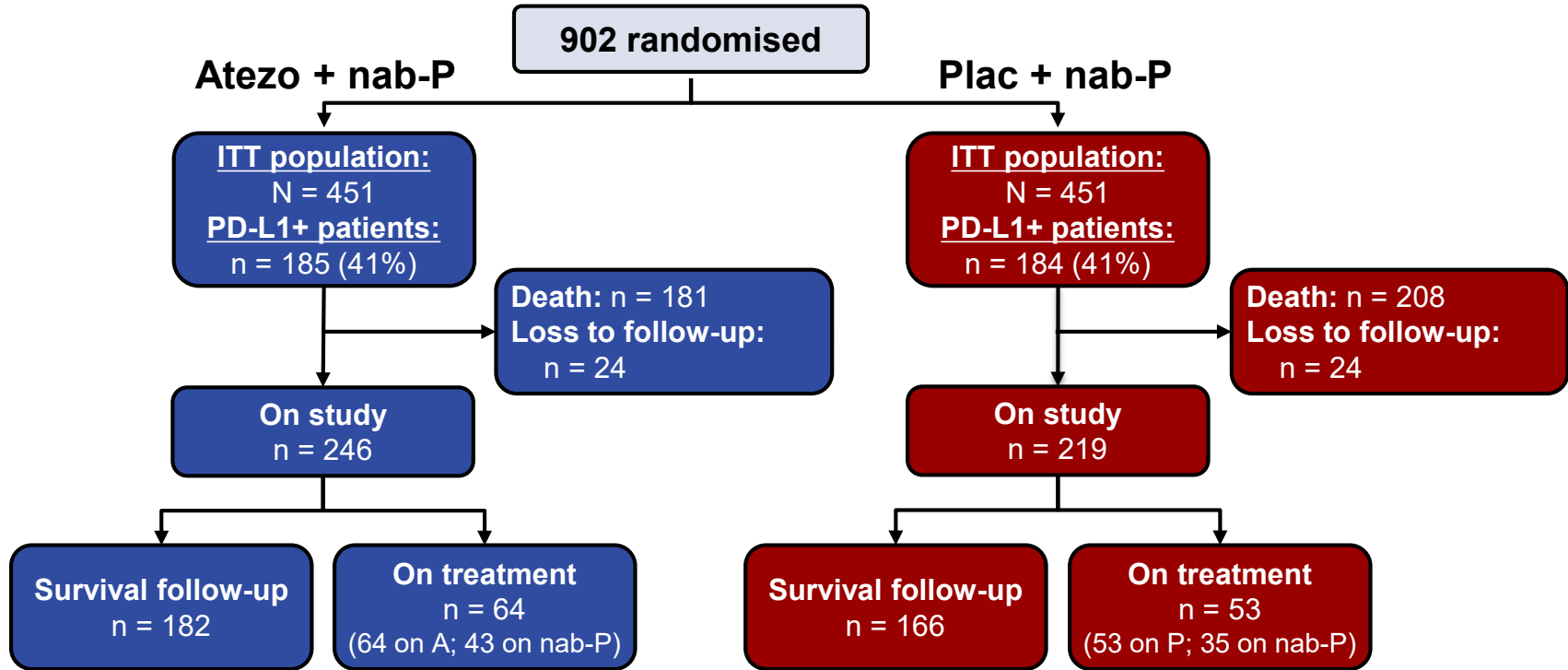
IMpassion130 statistical testing



- Primary PFS analysis (PFS tested in ITT and PD-L1+ populations)
- First interim OS analysis (OS tested in ITT population, then, if significant, in PD-L1+ population)

^a α recycled if PFS/ORR testing is significant. Hazard ratio (HR)/P value–stopping boundaries are dependent on the OS analysis timing.

IMpassion130 patient disposition



• Safety-evaluable population: 452^a

• Safety-evaluable population: 438^a

Data cutoff: 17 April 2018. ^a 6 patients per arm did not receive study treatment; 7 patients in the Plac + nab-P arm received 1 dose of atezolizumab and were evaluated in the Atezo + nab-P safety population.

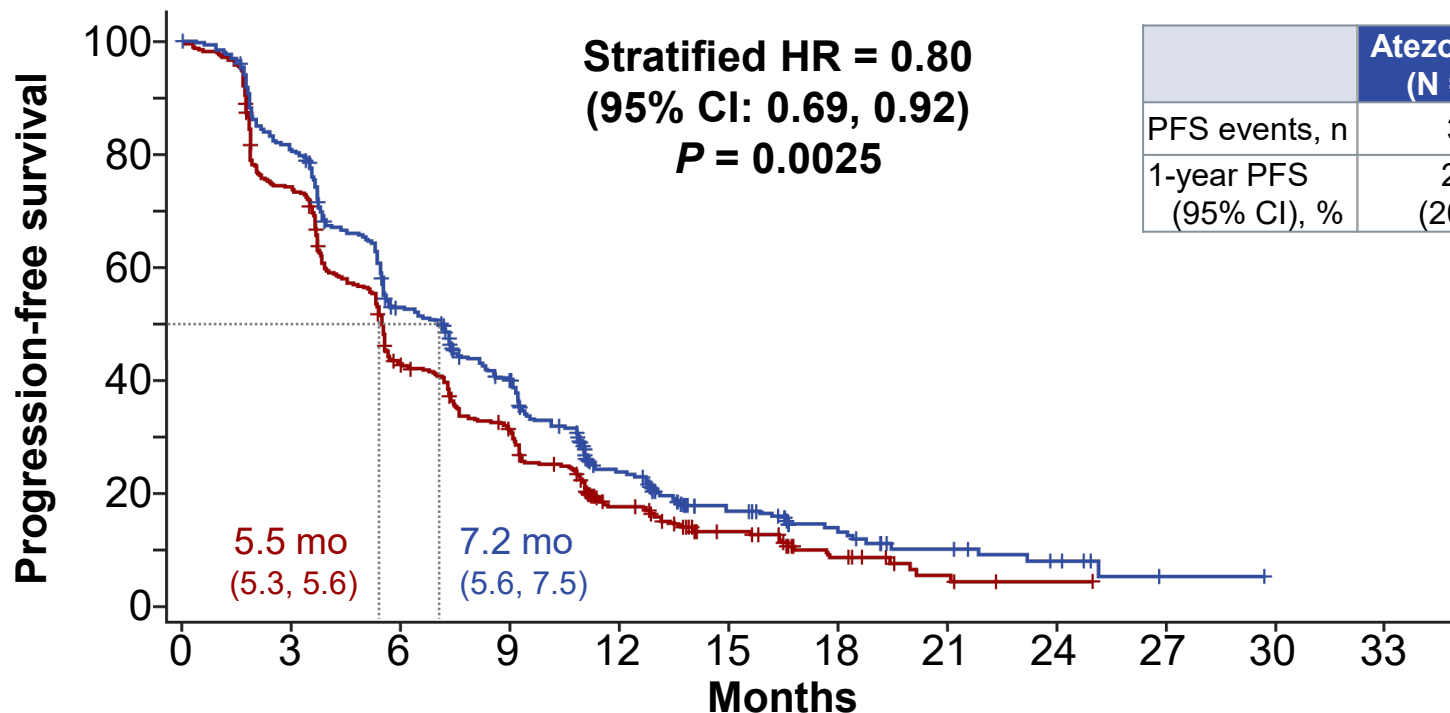
IMpassion130 baseline characteristics

Characteristic	Atezo + nab-P (N = 451)	Plac + nab-P (N = 451)
Median age (range), y	55 (20-82)	56 (26-86)
Female, n (%)	448 (99%)	450 (100%)
Race, n (%) ^a		
White	308 (68%)	301 (67%)
Asian	85 (19%)	76 (17%)
Black/African American	26 (6%)	33 (7%)
Other/multiple	20 (4%)	26 (6%)
ECOG PS, n (%) ^{b,c}		
0	256 (57%)	270 (60%)
1	193 (43%)	179 (40%)
Prior (neo)adjuvant treatment, n (%)		
Prior taxane	231 (51%)	230 (51%)
Prior anthracycline	243 (54%)	242 (54%)

Characteristic	Atezo + nab-P (N = 451)	Plac + nab-P (N = 451)
Metastatic disease, n (%)	404 (90%)	408 (91%)
No. of sites, n (%) ^d		
0-3	332 (74%)	341 (76%)
≥ 4	118 (26%)	108 (24%)
Site of metastatic disease, n (%)		
Lung	226 (50%)	242 (54%)
Bone	145 (32%)	141 (31%)
Liver	126 (28%)	118 (26%)
Brain	30 (7%)	31 (7%)
Lymph node only ^d	33 (7%)	23 (5%)
PD-L1+ (IC), n (%)	185 (41%)	184 (41%)

Data cutoff: 17 April 2018. ^a Race was unknown in 12 patients in the Atezo + nab-P arm and 15 in the Plac + nab-P arm. ^b Of n = 450 in each arm. ^c ECOG PS before start of treatment was 2 in 1 patient per arm. ^d Of n = 450 in the Atezo + nab-P arm and n = 449 in the Plac + nab-P arm.

Primary PFS analysis: ITT population



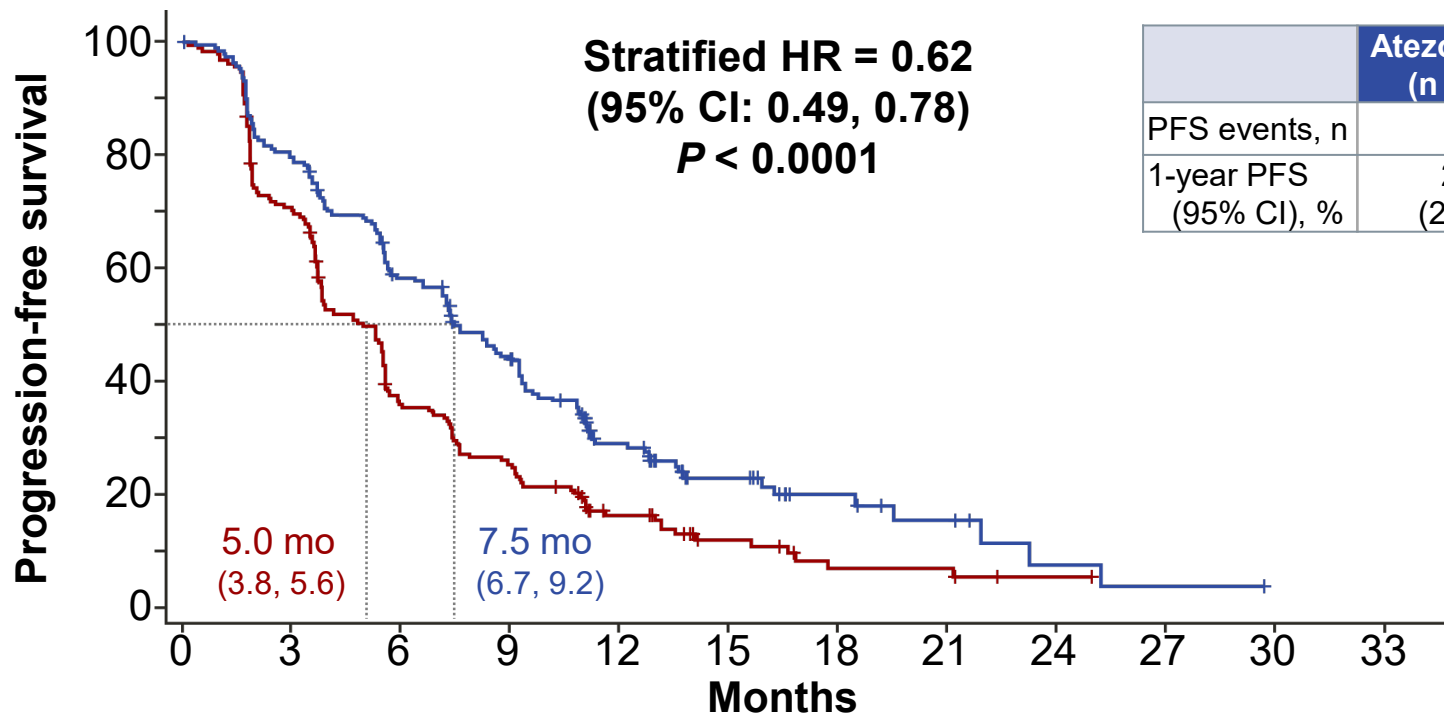
	Atezo + nab-P (N = 451)	Plac + nab-P (N = 451)
PFS events, n	358	378
1-year PFS (95% CI), %	24% (20, 28)	18% (14, 21)

No. at risk:
 Atezo + nab-P
 Plac + nab-P

451	360	226	164	77	34	20	11	6	1	NE	NE	NE
451	327	183	130	57	29	13	5	1	NE	NE	NE	NE

NE, not estimable. Data cutoff: 17 April 2018. Median PFS durations (and 95% CI) are indicated on the plot. Median follow-up (ITT): 12.9 months.

Primary PFS analysis: PD-L1+ population



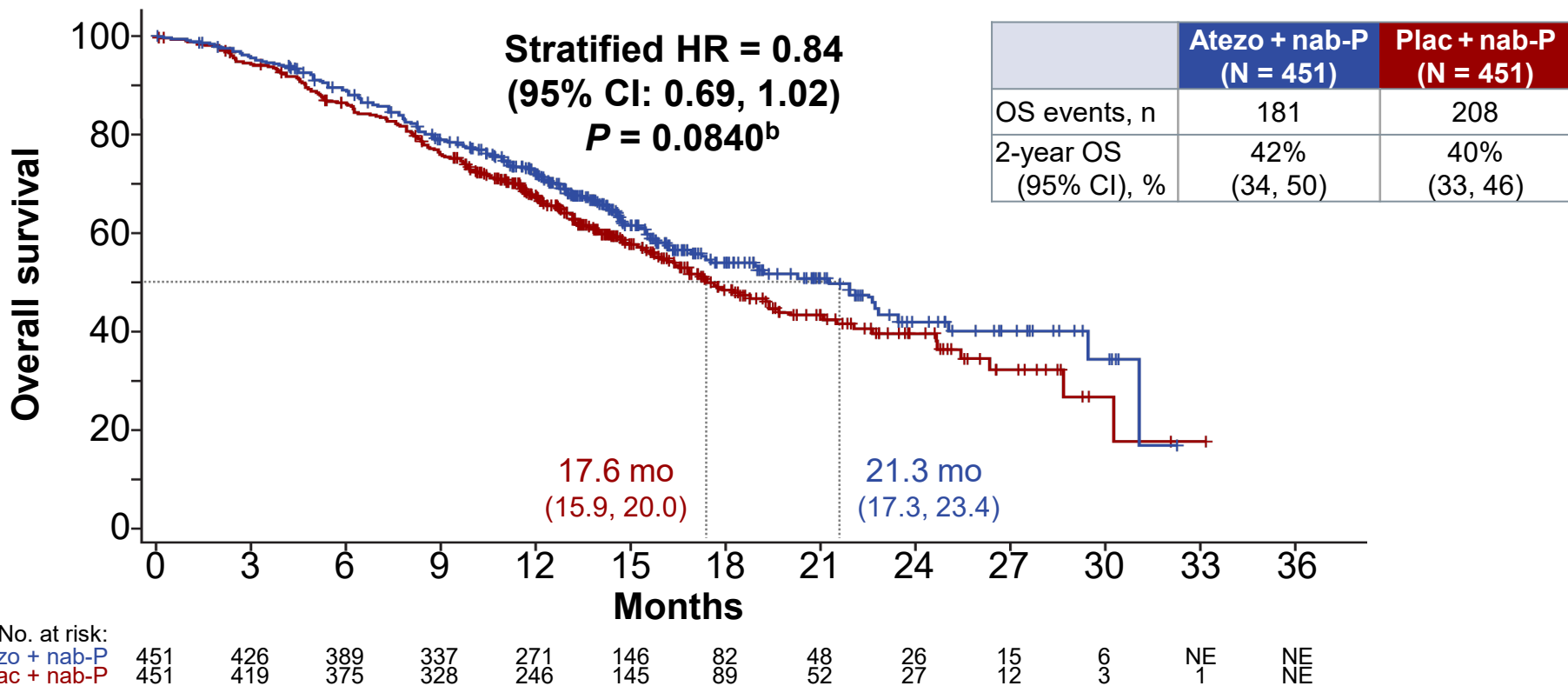
	Atezo + nab-P (n = 185)	Plac + nab-P (n = 184)
PFS events, n	138	157
1-year PFS (95% CI), %	29% (22, 36)	16% (11, 22)

No. at risk:

	0	3	6	9	12	15	18	21	24	27	30	33
Atezo + nab-P	185	146	104	75	38	19	10	6	2	1	NE	NE
Plac + nab-P	184	127	62	44	22	11	5	5	1	NE	NE	NE

Data cutoff: 17 April 2018.

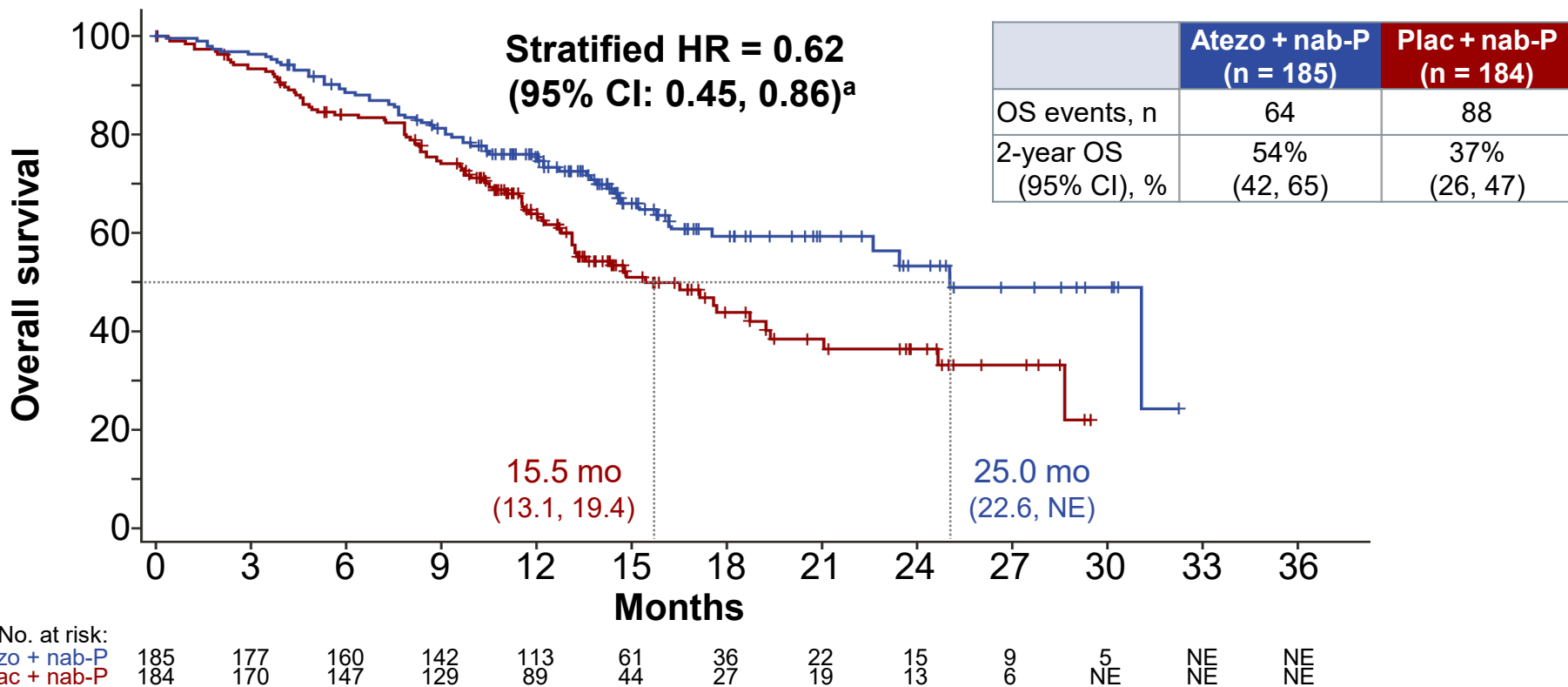
Interim OS analysis: ITT population^a



Data cutoff: 17 April 2018. Median OS durations (and 95% CI) are indicated on the plot. Median follow-up (ITT): 12.9 months.

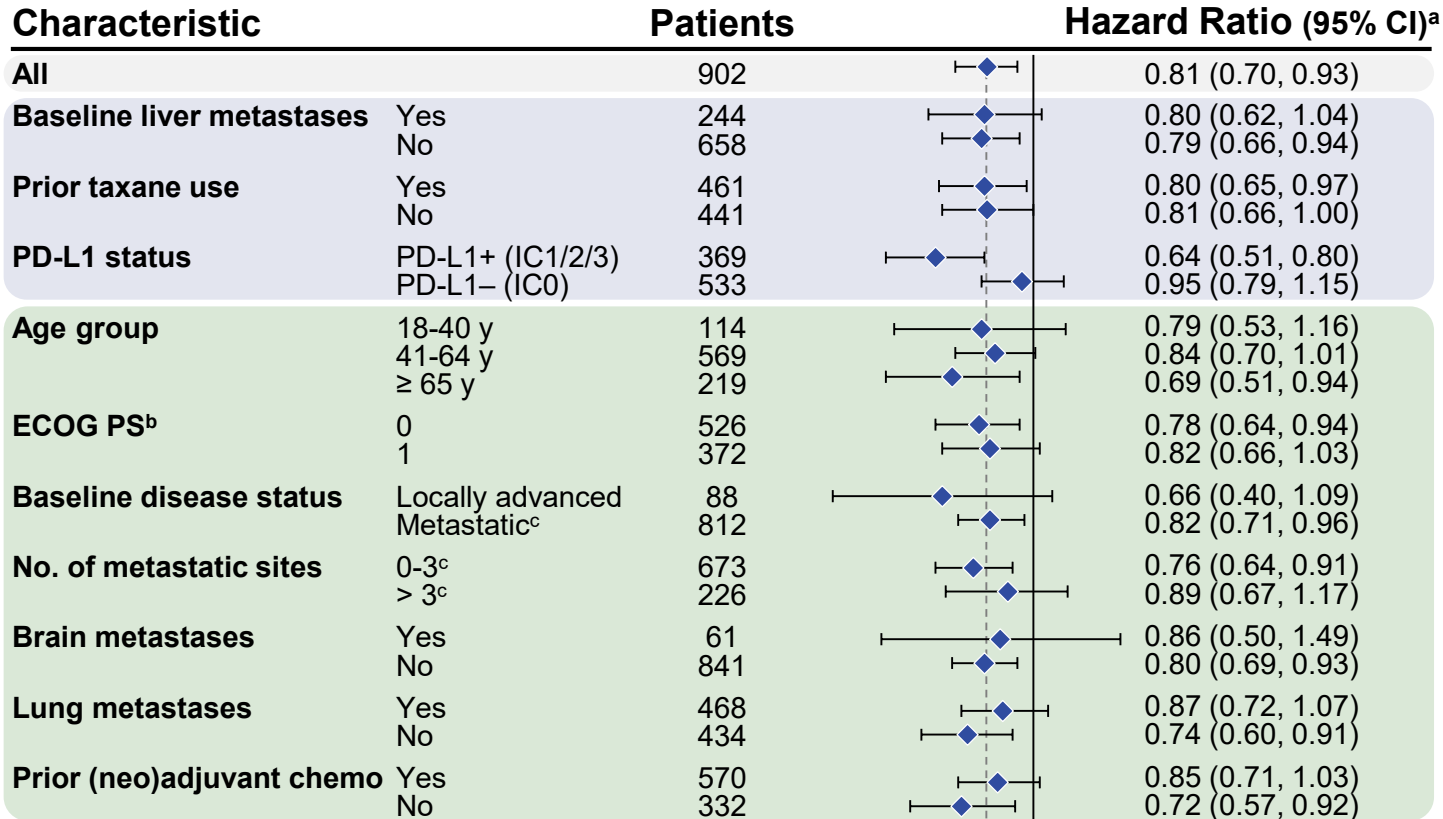
^a For the interim OS analysis, 59% of events had occurred. ^b Significance boundary was not crossed.

Interim OS analysis: PD-L1+ population



Data cutoff: 17 April 2018. Median OS durations (and 95% CI) are indicated on the plot. ^a Not formally tested.

PFS subgroup analysis: ITT population

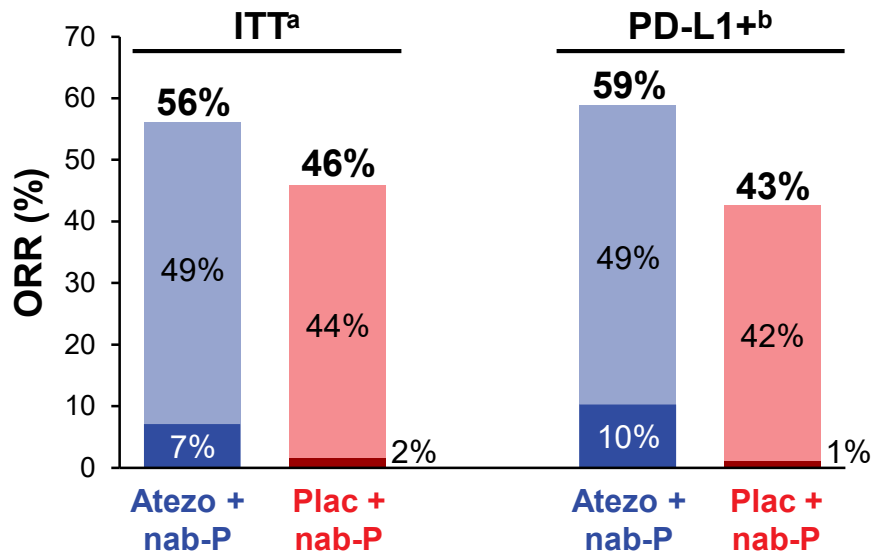


Stratification factors

Data cutoff: 17 April 2018.
^a Unstratified HRs are shown; 95% CIs are plotted as error bars. Dashed vertical line represents value in ITT population.
^b Patients with ECOG PS 2 not plotted.
^c Excludes patients with unknown/other values.

A + nab-P better ← 0.2 1 2 → P + nab-P better

Secondary efficacy endpoints



DOR, median (95% CI), mo	7.4 (6.9, 9.0)	5.6 (5.5, 6.9)	8.5 (7.3, 9.7)	5.5 (3.7, 7.1)
No. of ongoing responses, n (%) ^c	78 (31%)	52 (25%)	39 (36%)	19 (24%)

- Numerically higher and more durable responses were seen in the Atezo + nab-P arm
 - Differences were not significant based on α level = 0.1% (ITT: $P = 0.0021$; PD-L1+: $P = 0.0016$)
- The CR rate was higher in the Atezo + nab-P arm vs the Plac + nab-P arm
 - ITT population: 7% vs 2%
 - PD-L1+ patients: 10% vs 1%

Exposure and dose intensity

	<i>nab</i> -P Exposure		Atezo or Plac Exposure	
	Atezo + <i>nab</i> -P (n = 452)	Plac + <i>nab</i> -P (n = 438)	Atezo + <i>nab</i> -P (n = 452) ^a	Plac + <i>nab</i> -P (n = 438)
Treatment duration, weeks				
Median (range)	22.1 (0-137)	21.8 (0-103)	24.1 (0-139)	22.1 (0-109)
Patients with indicated treatment duration, n (%)				
≤ 16 weeks	361 (80%)	316 (72%)	355 (79%)	316 (72%)
≤ 6 months	315 (70%)	257 (59%)	311 (69%)	259 (59%)
≤ 12 months	100 (22%)	75 (17%)	138 (31%)	108 (25%)
≤ 18 months	53 (12%)	44 (10%)	89 (20%)	63 (14%)
> 18 months	12 (3%)	7 (2%)	25 (6%)	15 (3%)
Dose intensity, %				
Mean (SD)	87.7 (18%)	90.4 (15%)	95.8 (10%)	NE
No. of cycles				
Median (range)	6.0 (1-34)	6.0 (1-26)	7.0 (1-35)	6.0 (1-28)

- A higher proportion of patients in the Atezo + *nab*-P arm compared with the Plac + *nab*-P arm received *nab*-P for at least 6 months (70% vs 59%) and at least 12 months (22% vs 17%)
- Atezo did not compromise the dose intensity of *nab*-P

Safety summary

AE, n (%)	Atezo + nab-P (n = 452)	Plac + nab-P (n = 438)
All-cause AEs		
Any grade	449 (99%)	429 (98%)
Grade 3-4	220 (49%)	185 (42%)
Grade 5	6 (1%)	3 (1%)
Treatment-related AEs		
Any grade	436 (96%)	410 (94%)
Grade 3-4	179 (40%)	132 (30%)
Grade 5 ^a	3 (1%) ^a	1 (< 1%) ^a
Any grade serious AEs		
Serious AEs regardless of attribution	103 (23%)	80 (18%)
Treatment-related serious AEs	56 (12%)	32 (7%)
Any-grade AEs leading to any treatment discontinuation		
Leading to atezo or plac discontinuation	29 (6%)	6 (1%)
Leading to <i>nab-P</i> discontinuation	72 (16%)	36 (8%)
Any-grade AEs leading to any dose reduction or interruption		
Leading to atezo or plac dose interruption	139 (31%)	103 (24%)
Leading to <i>nab-P</i> dose reduction or interruption	195 (43%)	172 (39%)

AE, adverse event. Safety-evaluable population. Data cutoff: 17 April 2018. ^a Treatment-related deaths: autoimmune hepatitis, mucosal inflammation/death, septic shock (n = 1 each, Atezo + nab-P arm); hepatic failure (n = 1, Plac + nab-P arm).

Most common AEs regardless of attribution

AEs in ≥ 20% (all grade) or ≥ 3% (grade 3-4) of patients in either arm, n (%)	Atezo + nab-P (n = 452)		Plac + nab-P (n = 438)	
	Any Grade	Grade 3-4	Any Grade	Grade 3-4
Alopecia	255 (56%)	3 (1%)	252 (58%)	1 (< 1%)
Fatigue	211 (47%)	18 (4%)	196 (45%)	15 (3%)
Nausea^a	208 (46%)	5 (1%)	167 (38%)	8 (2%)
Diarrhoea	147 (33%)	6 (1%)	150 (34%)	9 (2%)
Anaemia	125 (28%)	13 (3%)	115 (26%)	13 (3%)
Constipation	113 (25%)	3 (1%)	108 (25%)	1 (< 1%)
Cough^a	112 (25%)	0	83 (19%)	0
Headache	105 (23%)	2 (< 1%)	96 (22%)	4 (1%)
Neuropathy peripheral	98 (22%)	25 (6%)	97 (22%)	12 (3%)
Neutropaenia^a	94 (21%)	37 (8%)	67 (15%)	36 (8%)
Decreased appetite	91 (20%)	3 (1%)	79 (18%)	3 (1%)
Neutrophil count decreased	57 (13%)	21 (5%)	48 (11%)	15 (3%)
Hypertension	22 (5%)	4 (1%)	24 (5%)	11 (3%)

- The most common AEs were generally similar between arms
- Most common Grade 3-4 AEs: neutropaenia, decreased neutrophil count, peripheral neuropathy, fatigue, anaemia
 - Grade 3-4 AEs ≥ 2% higher in the Atezo + nab-P arm included peripheral neuropathy (6% vs 3%)

Most common serious AEs

SAEs occurring in $\geq 1\%$ of patients in either arm (regardless of attribution)

SAE, n (%)	Atezo + nab-P (n = 452)		Plac + nab-P (n = 438)	
	Any Grade	Grade 3-4	Any Grade	Grade 3-4
All	103 (23%)	78 (17%) ^a	80 (18%)	56 (13%) ^b
Pneumonia	10 (2%)	8 (2%) ^c	5 (1%)	0
Urinary tract infection	5 (1%)	2 (< 1%)	0	0
Dyspnoea	5 (1%)	3 (1%)	2 (< 1%)	2 (< 1%)
Pyrexia	5 (1%)	3 (1%)	3 (1%)	0

- A higher proportion of patients in the Atezo + nab-P arm than in the Plac + nab-P arm reported SAEs (23% vs 18%)
- No SAE was reported with a $\geq 2\%$ difference between treatment arms

AESIs suggestive of potential immune-related aetiology

AESI, n (%) ^a	Atezo + nab-P (n = 452)		Plac + nab-P (n = 438)	
	Any Grade	Grade 3-4	Any Grade	Grade 3-4
All	259 (57%)	34 (8%)	183 (42%)	19 (4%)
Important AESIs				
Hepatitis (all)	69 (15%)	23 (5%)	62 (14%)	13 (3%)
Hepatitis (diagnosis)	10 (2%)	6 (1%)	7 (2%)	1 (< 1%)
Hepatitis (lab abnormalities)	62 (14%)	17 (4%)	58 (13%)	12 (3%)
Hypothyroidism	78 (17%)	0	19 (4%)	0
Hyperthyroidism	20 (4%)	1 (< 1%)	6 (1%)	0
Pneumonitis	14 (3%)	1 (< 1%)	1 (< 1%)	0
Meningoencephalitis ^b	5 (1%)	0	2 (< 1%)	0
Colitis	5 (1%)	1 (< 1%)	3 (1%)	1 (< 1%)
Adrenal insufficiency	4 (1%)	1 (< 1%)	0	0
Pancreatitis	2 (< 1%)	1 (< 1%)	0	0
Diabetes mellitus	1 (< 1%)	1 (< 1%)	2 (< 1%)	1 (< 1%)
Nephritis	1 (< 1%)	0	0	0
Other AESIs^c				
Rash	154 (34%)	4 (1%)	114 (26%)	2 (< 1%)
Infusion-related reactions	5 (1%)	0	5 (1%)	0

- 1 grade 5 AESI per arm (both treatment related):
 - Atezo + nab-P: autoimmune hepatitis
 - Plac + nab-P: hepatic failure
- All hypothyroidism AESIs were grade 1-2; none led to discontinuation
 - Atezo + nab-P: 17%
 - Plac + nab-P: 4%
- Pneumonitis was infrequent with only 1 grade 3-4 event in the Atezo + nab-P arm
 - Atezo + nab-P: 3%
 - Plac + nab-P: < 1%
- Hepatitis rates were balanced

AESI, adverse event of special interest. Data cutoff: 17 April 2018. ^a Baskets of preferred terms according to medical concepts. ^b All events of photophobia.

^c Includes all AESIs occurring in ≥ 1% of patients in either arm.

IMpassion130 conclusions

- ◆ IMpassion130 is the first Phase III study to demonstrate a benefit with first-line immunotherapy in mTNBC
 - Atezolizumab + *nab*-paclitaxel resulted in statistically significant PFS benefit in the ITT and PD-L1+ populations (ITT HR = 0.80 [95% CI: 0.69, 0.92] and PD-L1+ HR = 0.62 [95% CI: 0.49, 0.78]), which was clinically meaningful in the PD-L1+ population
 - At this first interim OS analysis, clinically meaningful improvement in OS with atezolizumab + *nab*-paclitaxel (vs placebo + *nab*-paclitaxel) was observed in the PD-L1+ population, with a HR of 0.62 and a median OS improvement from 15.5 months to 25.0 months (formal OS testing in PD-L1+ patients not performed per hierarchical study design)
 - No detriment observed for the PD-L1– subgroup
- ◆ Atezolizumab + *nab*-paclitaxel was well tolerated, with a safety profile consistent with each agent
- ◆ For patients with PD-L1+ tumours,^a these data establish atezolizumab + *nab*-paclitaxel as a new standard of care

^a PD-L1 expression on ≥1% of tumour-infiltrating immune cells.



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ORIGINAL ARTICLE

Atezolizumab and Nab-Paclitaxel in Advanced Triple-Negative Breast Cancer

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