

# AUSTRALIAN PRODUCT INFORMATION

## Tecentriq SC<sup>®</sup> (atezolizumab)

### 1 NAME OF THE MEDICINE

Atezolizumab

### 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Tecentriq 1875 mg/15 mL solution for subcutaneous (SC) injection

Each vial of 15 mL contains 1875 mg of atezolizumab at a concentration of 125 mg/mL.

For the full list of excipients, see section 6.1 *List of excipients*.

### 3 PHARMACEUTICAL FORM

#### **Solution for subcutaneous injection**

Tecentriq SC is supplied as a sterile, ready to use, single-dose vial containing 15 mL preservative-free, colourless to slightly yellow solution, at a concentration of 125 mg/mL.

*Tecentriq SC formulation is not intended for intravenous administration. For information about the intravenous dosage form of Tecentriq please see the separate intravenous Tecentriq Product Information.*

### 4 CLINICAL PARTICULARS

#### 4.1 Therapeutic indications

##### **Early-stage non-small cell lung cancer**

Tecentriq SC as monotherapy is indicated as adjuvant treatment following complete resection and no progression after platinum-based adjuvant chemotherapy for adult patients with stage II to IIIA (as per 7th edition of the UICC/AJCC staging system) NSCLC whose tumours have PD-L1 expression on  $\geq 50\%$  of tumour cells.

##### **Metastatic non-small cell lung cancer**

Tecentriq SC, in combination with bevacizumab, paclitaxel and carboplatin, is indicated for the first-line treatment of adult patients with metastatic non-squamous non-small cell lung cancer (NSCLC). In patients with EGFR mutant or ALK-positive NSCLC, Tecentriq SC, in combination with bevacizumab, paclitaxel and carboplatin, is indicated only after failure of appropriate targeted therapies.

Tecentriq SC, in combination with nanoparticle albumin-bound paclitaxel (nab-paclitaxel) and carboplatin, is indicated for first-line treatment of patients with metastatic non-squamous NSCLC who do not have tumour EGFR or ALK genomic aberrations.

Tecentriq SC as monotherapy is indicated for the treatment of adult patients with locally advanced or metastatic NSCLC after prior chemotherapy. Patients with EGFR mutant or ALK-positive NSCLC should also have received targeted therapies before receiving Tecentriq SC.

##### **Small cell lung cancer**

Tecentriq SC, in combination with carboplatin and etoposide, is indicated for the first-line treatment of patients with extensive-stage small cell lung cancer (ES-SCLC).

## **Urothelial carcinoma**

Tecentriq SC is indicated for the treatment of patients with locally advanced or metastatic urothelial carcinoma who

- are considered cisplatin ineligible and whose tumours express PD-L1 (PD-L1 stained tumour-infiltrating immune cells [IC] covering  $\geq 5\%$  of the tumour area), as determined by a validated test, or
- are considered ineligible for any other platinum-containing chemotherapy regardless of the level of tumour PD-L1 expression.

This indication is approved based on overall response rate and duration of response in a single-arm study. Improvements in overall survival, progression-free survival, or health-related quality of life have not been established.

## **Hepatocellular carcinoma**

Tecentriq SC, in combination with bevacizumab, is indicated for the treatment of patients with unresectable or metastatic hepatocellular carcinoma (HCC) who have not received prior systemic therapy.

## **4.2 Dose and method of administration**

### **General**

Tecentriq SC must be initiated and supervised by physicians experienced in the treatment of cancer.

In order to improve the traceability of biological medicinal products, the trade name and the batch number of the administered product should be clearly recorded in the patient medical record.

It is important to check the product labels to ensure that the correct formulation (intravenous Tecentriq or Tecentriq SC) is being administered to the patient as prescribed.

### **Patients currently receiving intravenous Tecentriq**

Patients currently receiving intravenous Tecentriq may transition to Tecentriq SC.

### **Tecentriq SC**

Tecentriq SC formulation is not intended for intravenous administration.

Tecentriq SC must be administered as a subcutaneous injection into the thigh only (see section 4.2 Instructions for Administration).

### **Dose**

#### *Tecentriq SC monotherapy*

#### *Patient selection for urothelial carcinoma*

Select cisplatin-ineligible patients with previously untreated locally advanced or metastatic urothelial carcinoma for treatment with Tecentriq SC based on the PD-L1 expression on tumour infiltrating immune cells confirmed by a validated test (see section 5.1 *Pharmacodynamic properties, Clinical Trials*).

**Table 1. Recommended Dosage of Tecentriq SC as Monotherapy**

<b>Indication</b>	<b>Recommended Dosage of Tecentriq SC</b>	<b>Duration of Therapy</b>
Urothelial carcinoma	<u>Tecentriq SC</u> 1875 mg every 3 weeks	Until disease progression or unacceptable toxicity
Metastatic NSCLC	<u>Tecentriq SC</u> 1875 mg every 3 weeks	Until disease progression or unacceptable toxicity
Early Stage NSCLC	<u>Tecentriq SC</u> 1875 mg every 3 weeks	Patients are treated with Tecentriq SC for 1 year unless there is disease recurrence or unacceptable toxicity

***Tecentriq SC in combination therapy***

Please also refer to the Product Information for the combination products.

**Table 2. Recommended Dosage of Tecentriq SC in Combination Therapy**

<b>Tecentriq SC recommended dosage regimen</b>		
<u>Tecentriq SC</u> 1875 mg every 3 weeks		
<b>Recommended dosage in indications with combination therapies</b>		
<b>Indication</b>	<b>Recommended Dosage</b>	<b>Duration of therapy</b>
NSCLC (in combination with bevacizumab, paclitaxel and carboplatin)	<u>Induction phase:</u> Tecentriq SC per recommended dosage regimen  Tecentriq SC should be administered first when given on the same day as combination partners  Bevacizumab, paclitaxel, then carboplatin every 3 weeks for 4 or 6 cycles  <u>Maintenance phase (without chemotherapy):</u> Tecentriq SC per recommended dosage regimen  Bevacizumab every 3 weeks	Until loss of clinical benefit or unmanageable toxicity
NSCLC (in combination with nab-paclitaxel and carboplatin)	<u>Induction phase:</u> Tecentriq SC per recommended dosage regimen  Tecentriq SC should be administered first when given on the same day as combination partners	Until loss of clinical benefit or unmanageable toxicity

	<p>Nanoparticle albumin-bound paclitaxel (nab-paclitaxel), then carboplatin every 3 weeks for 4 or 6 cycles</p> <p>For each three week cycle: Day 1: Tecentriq SC, nab-paclitaxel and carboplatin Day 8 and Day 15: nab-paclitaxel</p> <p><u>Maintenance phase (without chemotherapy):</u> Tecentriq SC per recommended dosage regimen</p>	
SCLC (in combination with carboplatin and etoposide)	<p><u>Induction phase:</u> Tecentriq SC per recommended dosage regimen</p> <p>Tecentriq SC should be administered first when given on the same day as combination partners</p> <p>Carboplatin then etoposide every 3 weeks for 4 cycles: Day 1: carboplatin then etoposide Day 2 and Day 3: etoposide</p> <p><u>Maintenance phase (without chemotherapy):</u> Tecentriq SC per recommended dosage regimen</p>	Until loss of clinical benefit or unmanageable toxicity
HCC (in combination with bevacizumab)	<p>Tecentriq SC per recommended dosage regimen</p> <p>Tecentriq SC should be administered first when given on the same day as combination partners</p> <p>Bevacizumab 15 mg/kg once every 3 weeks</p>	Until loss of clinical benefit or unmanageable toxicity

### Delayed or missed doses

If a planned dose of Tecentriq SC is missed, it should be administered as soon as possible. The schedule of administration must be adjusted to maintain the appropriate interval between doses.

### Dose modifications

Dose reductions of Tecentriq SC are not recommended.

### Dose delay or discontinuation

See also sections 4.4 *Special warnings and precautions for use* and 4.8 *Adverse effects (Undesirable effects)*.

**Table 3. Dose modification advice for Tecentriq SC**

<b>Adverse reaction</b>	<b>Severity</b>	<b>Treatment modification</b>
<b>Immune-mediated pneumonitis</b>	Grade 2	Withhold Tecentriq SC Treatment may be resumed when the event improves to Grade 0 or Grade 1 within 12 weeks, and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 3 or 4	Permanently discontinue Tecentriq SC
<b>Immune-mediated hepatitis in patients without HCC*</b>	Grade 2: (ALT or AST $> 3$ to $5 \times$ ULN <i>or</i> blood bilirubin $> 1.5$ to $3 \times$ ULN)	Withhold Tecentriq SC Treatment may be resumed when the event improves to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 3 or 4: (ALT or AST $> 5 \times$ ULN <i>or</i> blood bilirubin $> 3 \times$ ULN)	Permanently discontinue Tecentriq SC
<b>Immune-mediated hepatitis in patients with HCC*</b>	If AST/ALT is within normal limits at baseline and increases to $> 3 \times$ to $\leq 10 \times$ ULN <i>or</i> If AST/ALT is $> 1$ to $\leq 3 \times$ ULN at baseline and increases to $> 5 \times$ to $\leq 10 \times$ ULN <i>or</i> If AST/ALT is $> 3 \times$ to $\leq 5 \times$ ULN at baseline and increases to $> 8 \times$ to $\leq 10 \times$ ULN	Withhold Tecentriq SC Treatment may be resumed when the event improves to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	If AST/ALT increases to $> 10 \times$ ULN or total bilirubin increases to $> 3 \times$ ULN	Permanently discontinue
<b>Immune-mediated colitis</b>	Grade 2 or 3 diarrhoea (increase of $\geq 4$ stools/day over baseline) <i>or</i> symptomatic colitis	Withhold Tecentriq SC Treatment may be resumed when the event improves to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 4 diarrhoea or colitis (life threatening; urgent intervention indicated)	Permanently discontinue Tecentriq SC
<b>Immune-mediated hypothyroidism or hyperthyroidism</b>	Symptomatic	Withhold <sup>1</sup> Tecentriq SC <u>Hypothyroidism:</u>

<b>Adverse reaction</b>	<b>Severity</b>	<b>Treatment modification</b>
		Treatment may be resumed when symptoms are controlled by thyroid replacement therapy and TSH levels are decreasing <u>Hyperthyroidism:</u> Treatment may be resumed when symptoms are controlled by anti-thyroid medicinal product and thyroid function is improving
<b>Immune-mediated adrenal insufficiency</b>	Symptomatic	Withhold Tecentriq SC Treatment may be resumed when the symptoms improve to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day and the patient is stable on replacement therapy
<b>Immune-mediated hypophysitis</b>	Grade 2 or 3	Withhold Tecentriq SC Treatment may be resumed when the symptoms improve to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day and the patient is stable on replacement therapy
	Grade 4	Permanently discontinue Tecentriq SC
<b>Immune-mediated Type 1 diabetes mellitus</b>	Grade 3 or 4 hyperglycaemia (fasting glucose greater than 13.9 mmol/L)	Withhold <sup>1</sup> Tecentriq SC Treatment may be resumed when metabolic control is achieved on insulin replacement therapy
<b>Immune-mediated meningitis, encephalitis, myasthenic syndrome/myasthenia gravis, Guillain-Barré syndrome</b>	All grades	Permanently discontinue Tecentriq SC
<b>Immune-mediated myelitis</b>	Grade 2, 3 or 4	Permanently discontinue Tecentriq SC
<b>Immune-mediated facial paresis</b>	Grade 1 or 2	Withhold Tecentriq SC Treatment may be resumed when symptoms improves to Grade 0 or Grade 1 within 12 weeks, and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 3 or 4	Permanently discontinue Tecentriq SC
<b>Immune-mediated myocarditis</b>	Grade 2 or above	Permanently discontinue Tecentriq SC
<b>Immune-mediated pericardial disorders</b>	Grade 1 pericarditis	Withhold Tecentriq SC <sup>3</sup>
	Grade 2 or above	Permanently discontinue Tecentriq SC
<b>Immune-mediated myositis</b>	Grade 2 or 3	Withhold Tecentriq SC Treatment may be resumed when the symptoms improve to Grade 0 or Grade

<b>Adverse reaction</b>	<b>Severity</b>	<b>Treatment modification</b>
		1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 4 or grade 3 recurrent myositis	Permanently discontinue Tecentriq SC
<b>Immune-mediated nephritis</b>	Grade 2: (creatinine level $> 1.5$ to $3.0$ x baseline or $> 1.5 - 3.0$ x ULN)	Withhold Tecentriq SC Treatment may be resumed when the event improves to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 3: (creatinine level $> 3.0$ x baseline or $> 3.0$ x ULN) Grade 4: (creatinine level $> 6.0$ x ULN)	Permanently discontinue Tecentriq SC
<b>Immune-mediated pancreatitis</b>	Grade 3 or 4 serum amylase or lipase levels increased ( $> 2.0$ x ULN) or Grade 2 or 3 pancreatitis	Withhold Tecentriq SC Treatment may be resumed when serum amylase and lipase levels improve to Grade 0 or Grade 1 within 12 weeks, or symptoms of pancreatitis have resolved, and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 4 or any grade of recurrent pancreatitis	Permanently discontinue Tecentriq SC
<b>Infusion-related reactions</b>	Grade 1 or 2	Reduce injection rate or pause the injection. Treatment may be resumed when the event is resolved Premedication with antipyretic and antihistamines may be considered for subsequent doses
	Grade 3 or 4	Permanently discontinue Tecentriq SC
<b>Haemophagocytic lymphohistiocytosis</b>	Suspected haemophagocytic lymphohistiocytosis <sup>2</sup>	Permanently discontinue Tecentriq SC
<b>Rash/Severe cutaneous adverse reactions</b>	Grade 3 or suspected Stevens-Johnson syndrome (SJS) or toxic epidermal necrolysis (TEN) <sup>2</sup>	Withhold Tecentriq SC Treatment may be resumed when rash improves to Grade 0 or Grade 1 within 12 weeks, and corticosteroids have been reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 4 or confirmed Stevens-Johnson syndrome (SJS) or toxic epidermal necrolysis (TEN) <sup>2</sup>	Permanently discontinue Tecentriq SC
<b>Other immune-mediated adverse reactions</b>	Grade 2 or Grade 3	Withhold Tecentriq SC until adverse reactions recover to Grade 0-1 within 12 weeks, and corticosteroids have been

Adverse reaction	Severity	Treatment modification
		reduced to $\leq 10$ mg prednisone or equivalent per day
	Grade 4 or recurrent Grade 3	Permanently discontinue Tecentriq SC (except endocrinopathies controlled with replacement hormones)

Note: Toxicity grades are in accordance with National Cancer Institute Common Terminology Criteria for Adverse Event Version 4.0 (NCI-CTCAE v.4.).

\* HCC: hepatocellular carcinoma

<sup>1</sup> Treatment with Tecentriq SC may be resumed when symptoms are controlled and the patient is clinically stable.

<sup>2</sup> Regardless of severity

<sup>3</sup> Conduct a detailed cardiac evaluation to determine the aetiology and manage appropriately

Patients treated with Tecentriq SC must be given the Patient Card and be informed about the risks of atezolizumab.

## Special Dosage Instructions

### Paediatric use

The safety and efficacy of Tecentriq SC in children and adolescents below 18 years of age have not been established. Available safety data are described in section 4.4.

### Use in the elderly

Based on a population pharmacokinetic analysis, no dose adjustment of Tecentriq SC is required in patients  $\geq 65$  years of age (see sections 4.4 *Special warnings and precautions for use* and 5.2 *Pharmacokinetic properties*).

### Use in Asian patients

Due to increased haematologic toxicities observed in Asian patients in study GO29436 (IMpower150), it is recommended that the starting dose of paclitaxel should be 175 mg/m<sup>2</sup> every three weeks.

### Renal Impairment

Based on a population pharmacokinetic analysis, no dose adjustment is required in patients with mild or moderate renal impairment (see sections 4.4 *Special warnings and precautions for use* and 5.2 *Pharmacokinetic properties*). Data from patients with severe renal impairment are too limited to draw conclusions on this population.

### Hepatic impairment

Based on a population pharmacokinetic analysis, no dose adjustment is required for patients with mild or moderate hepatic impairment. Atezolizumab has not been studied in patients with severe hepatic impairment (see sections 4.4 *Special warnings and precautions for use* and 5.2 *Pharmacokinetic properties*).

### Eastern Cooperative Oncology Group (ECOG) performance status $\geq 2$

Patients with ECOG performance status  $\geq 2$  were excluded from the clinical trials in NSCLC, ES-SCLC and HCC (see sections 4.4 *Special warnings and precautions for use* and 5.1 *Pharmacodynamic properties*).

## Instructions for administration

### Tecentriq SC



Tecentriq SC is a ready-to-use solution for subcutaneous injection only and should not be diluted or mixed with other drugs.

Tecentriq SC should be inspected visually to ensure there is no particulate matter or discolouration prior to administration.

Tecentriq SC is for single use only and should be prepared by a healthcare professional.

#### *Preparation of the Syringe*

Tecentriq SC does not contain any antimicrobial preservative. If the dose is not administered immediately, refer to “Storage of the Syringe” below.

Prior to use, remove the vial from the refrigerator and allow the solution to come to room temperature.

Withdraw the entire contents of Tecentriq SC solution from the vial with a syringe and transfer needle (18G recommended).

Remove the transfer needle and attach a SC infusion set (e.g. winged / butterfly) containing a 23-25G stainless steel needle for injection. Use a SC infusion set with residual hold-up volume NOT exceeding 0.5 mL for administration.

Prime the SC infusion line with the drug product solution to eliminate the air in the infusion line and stop before the fluid reaches the needle.

Ensure the syringe contains exactly 15 mL of drug product solution after priming and expelling any excess volume from the syringe.

Administer immediately to avoid needle clogging. DO NOT store the prepared syringe that has been attached to the already-primed infusion set.

Administer Tecentriq SC solution subcutaneously in the thigh over approximately 7 minutes. DO NOT administer the remaining residual hold-up volume in the tubing to the patient.

The injection site should be alternated between the left and right thigh only. New injections should be given at least 2.5 cm from the previous site on healthy skin and never into areas where the skin is red, bruised, tender, or hard. During the treatment course with Tecentriq SC, other medications for subcutaneous administration should preferably be injected at different sites.

#### *Storage of the syringe*

If the dose is not used immediately, use aseptic technique to withdraw the entire contents of Tecentriq SC solution from the vial into the syringe to account for the dose volume (15mL) plus the priming volume for the SC infusion set. Replace the transfer needle with a syringe closing cap. DO NOT attach a SC infusion set for storage (see section 6.3 *Shelf-Life*).

### **4.3 Contraindications**

Tecentriq SC is contraindicated in patients with a known hypersensitivity to atezolizumab or any of the excipients.

## 4.4 Special warnings and precautions for use

### Assessment of PD-L1 status

When assessing the PD-L1 status of the tumour, it is important that a well-validated and robust methodology is chosen to minimise false negative or false positive determinations.

### Immune-mediated adverse reactions

Most immune-mediated adverse reactions occurring during treatment with atezolizumab were reversible with interruptions of atezolizumab and initiation of corticosteroids and/or supportive care. Immune-mediated adverse reactions affecting more than one body system have been observed. Immune-mediated adverse reactions with atezolizumab may occur after the last dose of atezolizumab. For suspected immune-mediated adverse reactions, a thorough evaluation to confirm aetiology or exclude other causes should be performed. Based on the severity of the adverse reaction, atezolizumab should be withheld and corticosteroids administered. Upon improvement to Grade  $\leq 1$ , corticosteroids should be tapered over  $\geq 1$  month. Based on limited data from clinical studies in patients whose immune-mediated adverse reactions could not be controlled with systemic corticosteroid use, administration of other systemic immunosuppressants may be considered.

Tecentriq SC must be permanently discontinued for any Grade 3 immune-mediated adverse reaction that recurs; for any Grade 4 immune-mediated adverse reactions (except for endocrinopathies that are controlled with replacement hormones); and for some Grade 2 and 3 immune-mediated adverse reactions (see sections 4.2 *Dose and method of administration* and 4.8 *Adverse effects (Undesirable effects)*).

### Immune-mediated pneumonitis

Cases of pneumonitis, including fatal cases, have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for signs and symptoms of pneumonitis.

Treatment with Tecentriq SC should be withheld for Grade 2 pneumonitis, and 1 to 2 mg/kg prednisone or equivalent per day should be started. If symptoms improve to  $\leq$  Grade 1, taper corticosteroids over  $\geq 1$  month. Treatment with Tecentriq SC may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks, and corticosteroids have been reduced to  $\leq 10$  mg prednisone or equivalent per day. Treatment with Tecentriq SC must be permanently discontinued for Grade 3 or 4 pneumonitis.

### Immune-mediated hepatitis

Cases of hepatitis, some leading to fatal outcomes, have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for signs and symptoms of hepatitis. Monitor aspartate aminotransferase (AST), alanine aminotransferase (ALT) and bilirubin prior to and periodically during treatment with Tecentriq SC. Appropriate management of patients with abnormal liver function tests (LFTs) at baseline should be considered.

Treatment with Tecentriq SC should be withheld if Grade 2 (ALT or AST  $> 3$  to  $5 \times$  ULN or blood bilirubin  $> 1.5$  to  $3.0 \times$  ULN) persists for more than 5 to 7 days, and 1 to 2 mg/kg prednisone or equivalent per day should be started. If the event improves to  $\leq$  Grade 1, taper corticosteroids over  $\geq 1$  month.

Treatment with Tecentriq SC may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks, and corticosteroids have been reduced to  $\leq$  10 mg oral prednisone or equivalent per day. Treatment with Tecentriq SC must be permanently discontinued for Grade 3 or Grade 4 events (ALT or AST  $>$  5.0 x ULN or blood bilirubin  $>$  3 x ULN).

### **Immune-mediated colitis**

Cases of diarrhoea or colitis have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for signs and symptoms of colitis.

Treatment with Tecentriq SC should be withheld for Grade 2 or 3 diarrhoea (increase of  $\geq$  4 stools/day over baseline) or colitis (symptomatic). For Grade 2 diarrhoea or colitis, if symptoms persist  $>$  5 days or recur, start 1 - 2 mg/kg prednisone or equivalent per day. Treat Grade 3 diarrhoea or colitis with IV corticosteroids (1 to 2 mg/kg/day methylprednisolone or equivalent). Once symptoms improve, treatment with 1 to 2 mg/kg/day of prednisone or equivalent should be started. If symptoms improve to  $\leq$  Grade 1, taper corticosteroids over  $\geq$  1 month. Treatment with Tecentriq SC may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks and corticosteroids have been reduced to  $\leq$  10 mg oral prednisone or equivalent per day. Treatment with Tecentriq SC must be permanently discontinued for Grade 4 (life threatening; urgent intervention indicated) diarrhoea or colitis.

### **Immune-mediated endocrinopathies**

Hypothyroidism, hyperthyroidism, adrenal insufficiency, hypophysitis and type 1 diabetes mellitus, including diabetic ketoacidosis, have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*).

Patients should be monitored for clinical signs and symptoms of endocrinopathies and for changes in thyroid function (at the start of treatment, periodically during treatment and as indicated based on clinical evaluation). Patients may present with the following: fatigue, headache, mental status changes, heat or cold intolerance, tachycardia or bradycardia, unusual bowel habits, weight change, polyuria/polydipsia, blurred vision. Unless an alternative aetiology has been identified, signs and symptoms of endocrinopathies should be conservatively considered immune-mediated. Appropriate management of patients with abnormal thyroid function tests at baseline should be considered.

Asymptomatic patients with abnormal thyroid function tests can receive Tecentriq SC. For symptomatic hypothyroidism, Tecentriq SC should be withheld and thyroid hormone replacement should be initiated as needed. Isolated hypothyroidism may be managed with replacement therapy and without corticosteroids. For symptomatic hyperthyroidism, Tecentriq SC should be withheld and an anti-thyroid drug should be initiated as needed. Treatment with a beta blocker may also be considered. Treatment with Tecentriq SC may be resumed when symptoms are controlled and thyroid function is improving.

For symptomatic adrenal insufficiency, Tecentriq SC should be withheld and treatment with intravenous corticosteroids (1 to 2 mg/kg per day of methylprednisolone or equivalent) should be started. Once symptoms improve, follow with 1 to 2 mg/kg per day of prednisone or equivalent. If symptoms improve to  $\leq$  Grade 1, taper corticosteroids over  $\geq$  1 month. Treatment may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks and corticosteroids have been reduced to the equivalent of  $\leq$  10 mg prednisone or equivalent per day and the patient is stable on replacement therapy (if required).

Treatment with Tecentriq SC should be withheld for Grade 2 or Grade 3 hypophysitis. Treatment with intravenous corticosteroids (1 to 2 mg/kg per day IV methylprednisolone or equivalent) should be started, and hormone replacement should be initiated as needed. Once symptoms improve, treatment with 1 to 2 mg/kg per day of prednisone or equivalent should follow. If symptoms improve to  $\leq$  Grade 1, corticosteroids should be tapered over  $\geq$  1 month. Treatment may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks and corticosteroids have been reduced to  $\leq$  10 mg per day prednisone or equivalent and the patient is stable on replacement therapy (if required). Treatment with Tecentriq SC should be permanently discontinued for Grade 4 hypophysitis.

Treatment with insulin should be initiated for type 1 diabetes mellitus. For  $\geq$  Grade 3 hyperglycaemia (fasting glucose greater than 13.9 mmol/L), Tecentriq SC should be withheld. Treatment with Tecentriq SC may be resumed if metabolic control is achieved on insulin replacement therapy.

### **Immune-mediated meningoencephalitis**

Meningoencephalitis has been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for clinical signs and symptoms of meningitis or encephalitis.

Treatment with Tecentriq SC must be permanently discontinued for any grade of meningitis or encephalitis. Treatment with intravenous corticosteroids (1 to 2 mg/kg IV methylprednisolone or equivalent per day) should be started. Once symptoms improve, treatment with 1 to 2 mg/kg oral prednisone or equivalent per day should follow.

### **Immune-mediated neuropathies**

Myasthenic syndrome/myasthenia gravis or Guillain-Barré syndrome, which may be life-threatening, and facial paresis were observed in patients receiving atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for symptoms of motor and sensory neuropathy.

Treatment with Tecentriq SC must be permanently discontinued for any grade of myasthenic syndrome/myasthenia gravis or Guillain-Barré syndrome. Consider initiation of systemic corticosteroids at a dose of 1 to 2 mg/kg oral prednisone or equivalent per day.

Treatment with Tecentriq SC must be permanently discontinued for Grade 3 or 4 facial paresis. Treatment with Tecentriq SC should be withheld for Grade 1 or 2 facial paresis, and treatment with systemic corticosteroids (1 to 2 mg/kg/day prednisone or equivalent) should be considered. Treatment may be resumed when symptoms improve to Grade 0 or Grade 1 within 12 weeks, and corticosteroids have been reduced to  $\leq$  10 mg prednisone or equivalent per day.

### **Immune-mediated myelitis**

Myelitis has been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be closely monitored for signs and symptoms that are suggestive of myelitis. Treatment with Tecentriq SC must be permanently discontinued for Grade 2, 3 or 4 myelitis.

### **Immune-mediated pancreatitis**

Pancreatitis, including increases in serum amylase and lipase levels, has been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be closely monitored for signs and symptoms that are suggestive of acute pancreatitis.

Treatment with Tecentriq SC should be withheld for  $\geq$  Grade 3 serum amylase or lipase levels increased ( $> 2.0$  ULN), or Grade 2 or 3 pancreatitis, and treatment with intravenous corticosteroids (1 to 2 mg/kg methylprednisolone or equivalent per day), should be started. Once symptoms improve, follow with 1 to 2 mg/kg oral prednisone or equivalent per day. Treatment with Tecentriq SC may be resumed when serum amylase and lipase levels improve to  $\leq$  Grade 1 within 12 weeks, or symptoms of pancreatitis have resolved, and corticosteroids have been reduced to  $\leq 10$  mg prednisone or equivalent per day. Treatment with Tecentriq SC should be permanently discontinued for Grade 4, or any grade of recurrent pancreatitis.

### **Haemophagocytic lymphohistiocytosis**

Haemophagocytic lymphohistiocytosis (HLH), including fatal cases, has been reported in patients receiving atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). HLH should be considered when the presentation of cytokine release syndrome is atypical or prolonged. Patients should be monitored for clinical signs and symptoms of HLH. Treatment with Tecentriq SC must be permanently discontinued for suspected haemophagocytic lymphohistiocytosis.

### **Immune-mediated myocarditis**

Myocarditis, including fatal cases, has been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for signs and symptoms of myocarditis. Myocarditis may also be a clinical manifestation of myositis and should be managed accordingly.

Treatment with Tecentriq SC should be withheld for suspected myocarditis and treatment with systemic corticosteroids at a dose of 1 to 2 mg/kg/day of prednisone or equivalent should be started. Treatment with Tecentriq SC must be permanently discontinued for Grade 2 or above myocarditis.

### **Immune-mediated myositis**

Cases of myositis, including fatal cases, have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for signs and symptoms of myositis. Patients with possible myositis should be monitored for signs of myocarditis.

Treatment with Tecentriq SC should be withheld for Grade 2 or 3 myositis and corticosteroid therapy (1 to 2 mg/kg/day prednisone or equivalent) should be initiated. If symptoms improve to  $\leq$  Grade 1, taper corticosteroids as clinically indicated. Treatment with Tecentriq SC may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks, and corticosteroids have been reduced to  $\leq 10$  mg prednisone or equivalent per day. Treatment with Tecentriq SC should be permanently discontinued for Grade 4 or Grade 3 recurrent myositis.

### **Immune-mediated pericardial disorders**

Pericardial disorders, including pericarditis, pericardial effusion and cardiac tamponade, some leading to fatal outcomes, have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)* and *Postmarketing Experience*). Patients should be monitored for clinical signs and symptoms of pericardial disorders.

For suspected Grade 1 pericarditis, treatment with Tecentriq SC should be withheld and prompt cardiology consultation with diagnostic workup according to current clinical guidelines should be initiated. For suspected Grade 2, 3 or 4 pericardial disorders, treatment with Tecentriq SC

should be withheld, prompt treatment with systemic corticosteroids at a dose of 1 to 2 mg/kg/day of prednisone or equivalent should be started and prompt cardiology consultation with diagnostic workup according to current clinical guidelines should be initiated. Once a diagnosis of a pericardial disorder event is established, treatment with Tecentriq SC must be permanently discontinued for Grade 2, 3 or 4 pericardial disorders.

### **Immune-mediated nephritis**

Nephritis has been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*). Patients should be monitored for changes in renal function.

Treatment with Tecentriq SC should be withheld for Grade 2 nephritis. Treatment with systemic corticosteroids (1 to 2 mg/kg/day prednisone or equivalent) should be initiated. Treatment with Tecentriq SC may be resumed when the symptoms improve to Grade 0 or Grade 1 within 12 weeks and corticosteroids have been reduced to the equivalent of  $\leq 10$  mg prednisone or equivalent per day. Tecentriq SC must be permanently discontinued for Grade 3 or 4 nephritis.

### **Immune-mediated severe cutaneous adverse reactions**

Immune-mediated severe cutaneous adverse reactions (SCARs), including cases of Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN), have been reported in patients receiving atezolizumab. Patients should be monitored for suspected severe skin reactions and other causes should be excluded. Based on the severity of the adverse reaction, Tecentriq SC should be withheld for Grade 3 skin reactions and treatment with systemic corticosteroids at a dose of 1-2 mg/kg/day of prednisone or equivalent should be initiated. Treatment with Tecentriq SC may be resumed if the event improves to  $\leq$  Grade 1 within 12 weeks, and corticosteroids have been reduced to  $\leq 10$  mg prednisone or equivalent per day. Treatment with Tecentriq SC should be permanently discontinued for Grade 4 skin reactions, and corticosteroids should be administered at a dose of 1-2 mg/kg/day of prednisone or equivalent .

For suspected SCARs, patients should be referred to a specialist for further diagnosis and management. Tecentriq SC should be withheld for patients with suspected SJS or TEN. For confirmed SJS or TEN, Tecentriq SC should be permanently discontinued.

Caution should be used when considering the use of Tecentriq SC in a patient who has previously experienced a severe or life-threatening skin adverse reaction on prior treatment with other immune-stimulatory anticancer agents.

### **Autoimmune Haemolytic Anaemia**

Atezolizumab can cause autoimmune haemolytic anaemia (AIHA). Patients should be monitored for signs and symptoms of drug-induced AIHA, and if this adverse reaction is observed, administration of Tecentriq SC should be permanently discontinued. Treatment for AIHA should be initiated, as deemed medically appropriate.

### **Infusion-related reactions**

Infusion-related reactions (IRRs), including hypersensitivity and anaphylaxis, have been observed in clinical trials with atezolizumab (see section 4.8 *Adverse effects (Undesirable effects)*).

The rate of injection should be reduced or treatment should be interrupted in patients with Grade 1 or 2 infusion-related reactions. Tecentriq SC should be permanently discontinued in patients with Grade 3 or 4 infusion-related reactions. Patients with Grade 1 or 2 infusion-related

reactions may continue to receive Tecentriq SC with close monitoring; premedication with an antipyretic and antihistamines may be considered.

### **Disease-specific precautions**

#### Patients excluded from clinical trials

Patients with the following conditions were excluded from clinical trials: history of autoimmune disease, history of pneumonitis, active brain metastasis, HIV, hepatitis B or hepatitis C infection. Patients who were administered a live, attenuated vaccine within 28 days prior to enrolment; systemic immunostimulatory agents within 4 weeks or systemic immunosuppressive medicinal products within 2 weeks prior to study entry were excluded from clinical trials.

Patients with a baseline performance status  $\geq 2$  were excluded (apart from Study GO29293 [IMvigor210] Cohort 1 that enrolled patients with cisplatin-ineligible urothelial carcinoma and allowed a baseline performance status  $\geq 2$ ) (see section 5.1 *Pharmacodynamic properties*).

#### Use of atezolizumab in combination with bevacizumab, paclitaxel and carboplatin in metastatic non-squamous NSCLC

Physicians should carefully consider the combined risks of the four-drug regimen of Tecentriq SC, bevacizumab, paclitaxel, and carboplatin before initiating treatment (see section 4.8 *Adverse effects (Undesirable effects)*).

Patients with NSCLC that had clear tumour infiltration into the thoracic great vessels or clear cavitation of pulmonary lesions, as seen on imaging, were excluded from the pivotal clinical study IMpower150 after several cases of fatal pulmonary haemorrhage were observed, which is a known risk factor of treatment with bevacizumab. In the absence of data, Tecentriq SC should be used with caution in these populations after careful evaluation of the balance of benefits and risks for the patient.

#### Use of atezolizumab in urothelial carcinoma for previously untreated patients who are considered cisplatin ineligible

The baseline and prognostic disease characteristics of the IMvigor210 Cohort 1 study population were overall comparable to patients in the clinic who would be considered cisplatin ineligible but would be eligible for a carboplatin based combination chemotherapy. There are insufficient data for the subgroup of patients that would be unfit for any chemotherapy; therefore Tecentriq SC should be used with caution in these patients, after careful consideration of the potential balance of risks and benefits on an individual basis.

#### Use of atezolizumab in combination with bevacizumab in hepatocellular carcinoma

Bleeding (including fatal events) is a known adverse reaction with bevacizumab. Serious bleeding events, including fatalities, have occurred in hepatocellular cancer patients treated with the combination of atezolizumab and bevacizumab.

There is lack of clinical data to support the combination of atezolizumab and bevacizumab in hepatocellular cancer patients with bleeding varices (including recent bleeds), untreated varices or varices at high risk of bleeding because these patients were excluded from treatment with intravenous Tecentriq and bevacizumab in the IMbrave150 pivotal study (see section 5.1 *Pharmacodynamic properties; Clinical Trials*).

Carefully consider the risks of Tecentriq SC plus bevacizumab in patients with HCC before initiating treatment. Patients with HCC should be evaluated for the presence of varices and have

varices treated as indicated within 6 months prior to initiating therapy with the combination of Tecentriq SC and bevacizumab.

Refer to the bevacizumab Product Information for full prescribing information on the risks of bleeding events.

### **Use in hepatic impairment**

Based on a population pharmacokinetic analysis, no dose adjustment is required for patients with mild or moderate hepatic impairment (see sections 4.2 *Dose and method of administration* and 5.2 *Pharmacokinetic properties*). There are no data in patients with moderate or severe hepatic impairment.

### **Use in renal impairment**

Based on a population pharmacokinetic analysis, no dose adjustment is required in patients with mild or moderate renal impairment (see sections 4.2 *Dose and method of administration* and 5.2 *Pharmacokinetic properties*). Data from patients with severe renal impairment are too limited to draw conclusions on this population.

### **Use in the elderly**

No overall differences in safety or efficacy were observed between patients  $\geq 65$  years of age and younger patients (see sections 4.2 *Dose and method of administration* and 5.2 *Pharmacokinetic properties*).

### **Paediatric use**

Tecentriq SC is not approved for use in patients under the age of 18 years. The safety and efficacy of Tecentriq SC in the population has not been established. An early phase study conducted in paediatric and young adult patients did not demonstrate clinical benefit of atezolizumab.

### **Effects on laboratory tests**

No data available.

## **4.5 Interactions with other medicines and other forms of interactions**

No formal pharmacokinetic drug-drug interaction studies have been conducted with atezolizumab. Since atezolizumab is cleared from the circulation through catabolism, no metabolic drug-drug interactions are expected.

The use of systemic corticosteroids or immunosuppressants before starting atezolizumab should be avoided because of their potential interference with the pharmacodynamic activity and efficacy of atezolizumab. However, systemic corticosteroids or other immunosuppressants can be used to treat immune-mediated adverse reactions after starting atezolizumab.

## **4.6 Fertility, pregnancy and lactation**

### **Effects on fertility**

No fertility studies have been conducted with atezolizumab however assessment of the cynomolgus monkey male and female reproductive organs was included in the chronic toxicity study. Atezolizumab had an effect on menstrual cycles in all female monkeys in the 50 mg/kg/week dose group characterised by an irregular cycle pattern during the dosing phase and correlated with the lack of fresh corpora lutea in the ovaries at the terminal necropsy; this effect was reversible during the dose-free recovery period. The AUC at the no effect level



(15mg/kg/week) was approximately 3.5 times that anticipated in patients at the clinical dose yielding the highest exposure. There was no effect on the male reproductive organs.

#### **Use in pregnancy - Category D**

Based on the mechanism of action, the use of Tecentriq SC may cause fetal harm. Administration of Tecentriq SC is expected to have an adverse effect on pregnancy and poses a risk to the human fetus, including embryofetal lethality. Animal studies have demonstrated that inhibition of the PD-L1/PD-1 pathway can lead to an increased risk of immune-mediated rejection of the developing fetus resulting in fetal death.

No dedicated reproductive or teratogenicity studies in animals have been conducted with atezolizumab.

Tecentriq SC contains vorhyaluronidase alfa (see section 6.1 List of excipients). Reproductive toxicology studies with vorhyaluronidase alfa revealed embryofetal toxicity in mice at high systemic exposure, but did not show teratogenic potential.

There are no clinical studies of atezolizumab in pregnant women. Tecentriq SC is not recommended during pregnancy unless the potential benefit for the mother outweighs the potential risk to the fetus. Pregnant women should be advised of the potential risk to the fetus.

Women of childbearing potential should use highly effective contraception during treatment with Tecentriq SC and for 5 months after the last dose.

The safety of atezolizumab during labour and delivery has not been established.

#### **Use in lactation**

It is not known whether atezolizumab is excreted in human breast milk. No studies have been conducted to assess the impact of atezolizumab on milk production or its presence in breast milk. As the potential for harm to the nursing infant is unknown, a decision must be made to either discontinue breast-feeding or discontinue Tecentriq SC therapy.

#### **4.7 Effects on ability to drive and use machines**

No studies on the effects on the ability to drive and to use machines have been performed. Atezolizumab has minor influence on the ability to drive and use machines. Patients experiencing fatigue should be advised not to drive and use machines until symptoms abate.

#### **4.8 Adverse effects (Undesirable effects)**

The following categories of frequency have been used: very common ( $\geq 1/10$ ), common ( $\geq 1/100$  to  $< 1/10$ ), uncommon ( $\geq 1/1,000$  to  $< 1/100$ ), rare ( $\geq 1/10,000$  to  $< 1/1,000$ ), very rare ( $< 1/10,000$ ).

#### **Atezolizumab monotherapy**

The safety of atezolizumab as a monotherapy is based on pooled data in 3178 patients across multiple tumour types with supporting data from the estimated cumulative exposure in  $> 13,000$  patients across all clinical trials. The most common adverse reactions ( $> 10\%$ ) were fatigue (35.9%), decreased appetite (25.5%), nausea (23.5%), cough (20.8%), dyspnoea (20.5%), pyrexia (20.1%), diarrhoea (19.7%), rash (19.3%), musculoskeletal pain (15.4%), back pain (15.3%), vomiting (15.0%), asthenia (14.5%), arthralgia (13.9%), pruritus (12.6%), headache (11.1%) and urinary tract infection (11.6%).

Table 4 summarises the adverse drug reactions (ADRs) that have been reported in association with the use of intravenous Tecentriq or Tecentriq SC monotherapy.

**Table 4. Summary of ADRs occurring in patients treated with intravenous Tecentriq or SC monotherapy in clinical trials**

System Organ Class/ADR (MedDRA preferred term)	Atezolizumab (n = 3178)			Frequency (All Grades)
	All Grades (%)	Grade 3 - 4 (%)	Grade 5 (%)	
<b>Blood and Lymphatic System Disorders</b>				
Thrombocytopenia <sup>n</sup>	116 (3.7%)	27 (0.8%)	0 (0%)	Common
Haemophagocytic lymphohistiocytosis <sup>ff</sup>	1 (<0.1%)	0 (0%)	1 (<0.1%)	Rare
<b>Cardiac Disorders</b>				
Myocarditis <sup>a</sup>	-	-	-	Rare
Pericardial disorders <sup>ee, ff</sup>	45 (1.4%)	22 (0.7%)	2 (<0.1%)	Common
<b>Endocrine Disorders</b>				
Hypothyroidism <sup>b</sup>	164 (5.2%)	6 (0.2%)	0 (0%)	Common
Hyperthyroidism <sup>c</sup>	30 (0.9%)	1 (< 0.1%)	0 (0%)	Uncommon
Adrenal insufficiency <sup>d</sup>	11 (0.3%)	2 (< 0.1%)	0 (0%)	Uncommon
Hypophysitis <sup>y</sup>	2 (< 0.1%)	0 (0%)	0 (0%)	Rare
Diabetes mellitus <sup>e</sup>	10 (0.3%)	6 (0.2%)	0 (0%)	Uncommon
<b>Eye Disorders</b>				
Uveitis	3 (< 0.1%)	0 (0%)	0 (0%)	Rare
<b>Gastrointestinal Disorders</b>				
Diarrhoea <sup>o</sup>	626 (19.7%)	36 (1.1%)	0 (0%)	Very Common
Dysphagia	82 (2.6%)	16 (0.5%)	0 (0%)	Common
Colitis <sup>f</sup>	34 (1.1%)	18 (0.6%)	0 (0%)	Common
Nausea	747 (23.5%)	35 (1.1%)	0 (0%)	Very Common
Vomiting	477 (15.0%)	26 (0.8%)	0 (0%)	Very Common
Abdominal pain	268 (8.4%)	34 (1.1%)	0 (0%)	Common
Pancreatitis <sup>g</sup>	18 (0.6%)	13 (0.4%)	0 (0%)	Uncommon
Oropharyngeal pain <sup>q</sup>	131 (4.1%)	0 (0%)	0 (0%)	Common
Dry mouth	154 (4.8%)	0 (0%)	0 (0%)	Common
<b>General Disorders and Administration Site Conditions</b>				
Chills	207 (6.5%)	2 (< 0.1%)	0 (0%)	Common
Fatigue	1142 (35.9%)	109 (3.4%)	0 (0%)	Very Common
Asthenia	461 (14.5%)	63 (2.0%)	0 (0%)	Very Common
Influenza like illness	186 (5.9%)	1 (< 0.1%)	0 (0%)	Common
Pyrexia	638 (20.1%)	17 (0.5%)	0 (0%)	Very Common
Infusion related reaction <sup>h</sup>	34 (1.1%)	5 (0.2%)	0 (0%)	Common
Injection site reaction <sup>gg</sup>	11 (4.5%)	0 (0%)	0 (0%)	Common
<b>Hepatobiliary Disorders</b>				
ALT increased	167 (5.3%)	46 (1.4%)	0 (0%)	Common
AST increased	180 (5.7%)	46 (1.4%)	0 (0%)	Common
Hepatitis <sup>i</sup>	62 (2.0%)	25 (0.8%)	2 (< 0.1%)	Common

System Organ Class/ADR (MedDRA preferred term)	Atezolizumab (n = 3178)			
	All Grades (%)	Grade 3 - 4 (%)	Grade 5 (%)	Frequency (All Grades)
<b>Immune System Disorders</b>				
Hypersensitivity	36 (1.1%)	3 (< 0.1%)	0 (0%)	Common
<b>Infections and Infestations</b>				
Urinary tract infection <sup>p</sup>	368 (11.6%)	86 (2.7%)	0 (0%)	Very Common
<b>Metabolism and Nutrition Disorders</b>				
Decreased appetite	810 (25.5%)	35 (1.1%)	0 (0%)	Very Common
Hypokalemia <sup>v</sup>	142 (4.5%)	33 (1.0%)	0 (0%)	Common
Hyponatremia <sup>w</sup>	171 (5.4%)	98 (3.1%)	0 (0%)	Common
Hyperglycaemia	103 (3.2%)	32 (1.0%)	0 (0%)	Common
<b>Musculoskeletal and Connective Tissue Disorders</b>				
Arthralgia	441 (13.9%)	23 (0.7%)	0 (0%)	Very Common
Back pain	487 (15.3%)	52 (1.6%)	0 (0%)	Very Common
Musculoskeletal pain <sup>f</sup>	489 (15.4%)	36 (1.1%)	0 (0%)	Common
Myositis <sup>t, u</sup>	13 (0.4%)	5 (0.2%)	0 (0%)	Uncommon
<b>Nervous System Disorders</b>				
Headache	352 (11.1%)	10 (0.3%)	0 (0%)	Very Common
Guillain-Barré syndrome <sup>i</sup>	5 (0.2%)	4 (0.1%)	0 (0%)	Uncommon
Meningoencephalitis <sup>k</sup>	14 (0.4%)	6 (0.2%)	0 (0%)	Uncommon
Myasthenic syndrome <sup>z</sup>	1 (< 0.1%)	0 (0%)	0 (0%)	Rare
Facial paresis <sup>ff</sup>	1 (<0.1%)	0 (0%)	0 (0%)	Rare
Myelitis <sup>ff</sup>	1 (<0.1%)	1 (<0.1%)	0 (0%)	Rare
<b>Renal and Urinary Disorders</b>				
Blood creatinine increased <sup>aa</sup>	171 (5.4%)	14 (0.4%)	0 (0%)	Common
Nephritis <sup>s</sup>	3 (< 0.1%)	1 (< 0.1%)	0 (0%)	Rare
<b>Respiratory, Thoracic, and Mediastinal Disorders</b>				
Cough	660 (20.8%)	9 (0.3%)	0 (0%)	Very Common
Dyspnoea	651 (20.5%)	117 (3.7%)	1 (< 0.1%)	Very Common
Hypoxia <sup>x</sup>	75 (2.4%)	36 (1.1%)	0 (0%)	Common
Pneumonitis <sup>l</sup>	87 (2.7%)	27 (0.8%)	1 (< 0.1%)	Common
Nasopharyngitis <sup>bb</sup>	280 (8.8%)	0 (0%)	0 (0%)	Common
<b>Skin and Subcutaneous Tissue Disorders</b>				
Rash <sup>m</sup>	613 (19.3%)	33 (1.0%)	0 (0%)	Very Common
Pruritus	400 (12.6%)	7 (0.2%)	0 (0%)	Very Common
Dry skin	187 (5.9%)	1 (< 0.1%)	0 (0%)	Common
Psoriatic conditions <sup>cc</sup>	19 (0.6%)	2 (< 0.1%)	0 (0%)	Uncommon
Severe cutaneous adverse reactions <sup>dd</sup>	22 (0.7%)	3 (<0.1%)	1 (<0.1%)	Uncommon
<b>Vascular Disorders</b>				
Hypotension	102 (3.2%)	20 (0.6%)	0 (0%)	Common

<sup>a</sup>. Reported in studies outside the pooled dataset. The frequency is based on the program-wide exposure

<sup>b</sup>. Includes reports of hypothyroidism, blood thyroid stimulating hormone increased, blood thyroid stimulating hormone decreased, thyroiditis, autoimmune hypothyroidism, euthyroid sick syndrome, myxoedema, thyroid function test abnormal, thyroiditis acute, thyroxine decreased

- c. Includes reports of hyperthyroidism, Basedow's disease, endocrine ophthalmopathy, exophthalmos
- d. Includes reports of adrenal insufficiency, primary adrenal insufficiency
- e. Includes reports of diabetes mellitus, type 1 diabetes mellitus, diabetic ketoacidosis and ketoacidosis
- f. Includes reports of colitis, autoimmune colitis, colitis ischaemic, colitis microscopic, colitis ulcerative
- g. Includes reports of pancreatitis, autoimmune pancreatitis, pancreatitis acute, lipase increased, amylase increased
- h. includes infusion related reaction, cytokine release syndrome
- i. Includes reports of ascites, autoimmune hepatitis, hepatocellular injury, hepatitis, hepatitis acute, hepatotoxicity, liver disorder, drug-induced liver injury, hepatic failure, hepatic steatosis, hepatic lesion, oesophageal varices haemorrhage, varices oesophageal
- j. Includes reports of Guillain-Barré syndrome, demyelinating polyneuropathy
- k. Includes reports of encephalitis, meningitis, photophobia
- l. Includes reports of pneumonitis, lung infiltration, bronchiolitis, interstitial lung disease, radiation pneumonitis.
- m. Includes reports of rash, rash maculo-papular, erythema, rash pruritic, dermatitis acneiform, eczema, dermatitis, rash erythematous, skin ulcer, rash papular, folliculitis, rash macular, skin exfoliation, rash pustular, , furuncle, acne, drug eruption, palmar-plantar erythrodysesthesia syndrome, seborrhoeic dermatitis, dermatitis allergic, erythema of eyelid, skin toxicity, eyelid rash, fixed eruption, rash papulosquamous, rash vesicular, blister, lip blister, pemphigoid, oral blood blister, scrotal dermatitis (cases of scrotal dermatitis have been reported in studies outside the pooled dataset)
- n. Includes reports of thrombocytopenia and platelet count decreased
- o. Includes reports of diarrhoea, frequent bowel movements, and gastrointestinal hypermotility
- p. Includes reports of urinary tract infection, cystitis, pyelonephritis, Escherichia urinary tract infection, pyelonephritis acute, urinary tract infection bacterial, kidney infection, urinary tract infection fungal, urinary tract infection pseudomonal
- q. Includes reports of oropharyngeal pain, throat irritation, oropharyngeal discomfort
- r. Includes reports of musculoskeletal pain, myalgia, bone pain
- s. Includes reports of nephritis, Henoch-Scholein Purpura nephritis
- t. Includes reports of myositis, rhabdomyolysis, polymyalgia rheumatica, dermatomyositis, muscle abscess, myoglobin urine present
- u. Fatal cases have been reported in studies outside the pooled dataset
- v. Includes reports of hypokalaemia and blood potassium decreased
- w. Includes reports of hyponatraemia and blood sodium decreased
- x. Includes reports of hypoxia, oxygen saturation decreased, PO<sub>2</sub> decreased
- y. Includes reports of hypophysitis and temperature regulation disorder
- z. Includes report of myasthenia gravis
- aa. Includes reports of blood creatinine increased and hypercreatininaemia
- bb Includes reports of nasopharyngitis, nasal congestion and rhinorrhoea
- cc Includes reports of dermatitis psoriasiform and psoriasis
- dd Includes reports of dermatitis bullous, exfoliative rash, erythema multiforme, dermatitis exfoliative generalised, toxic skin eruption, toxic epidermal necrolysis
- ee Includes reports of pericarditis, pericardial effusion, cardiac tamponade and pericarditis constrictive
- ff Reported from postmarketing experience outside the pooled dataset. The frequency is based on the program-wide exposure
- gg Reported in a study outside of the pooled dataset (subcutaneous administration related). The frequency is based on exposure to Tecentriq SC in IMscin001 and includes reports of injection site reaction, injection site pain, injection site erythema and injection site rash

### **Atezolizumab combination therapy**

The safety of atezolizumab given in combination with other medicinal products is based on pooled data in 4,371 patients in clinical trials across multiple tumour types. Additional ADRs associated with the use of atezolizumab in combination therapy (not reported in monotherapy trials) are summarised in Table 5. ADRs with a clinically relevant difference when compared to monotherapy (refer to Table 4) are also presented. The most common adverse reactions ( $\geq 10\%$ ) were anaemia (36.8%), neutropenia (35.8%), thrombocytopenia (27.7%), alopecia (26.4%), constipation (25.7%), peripheral neuropathy (23.0%), hypertension (14.0%), hypothyroidism (13.4%), leucopenia (13.1%), lung infection (12.9%), peripheral oedema (10.3%) and nasopharyngitis (10.1%).

**Table 5. Summary of ADRs occurring in patients treated with atezolizumab combination therapy in clinical trials**

System Organ Class/ADR (MedDRA preferred term)	Atezolizumab + Combination Treatments (n = 4371)			
	All Grades (%)	Grade 3-4 (%)	Grade 5 (%)	Frequency (All Grades)
<b>Blood and Lymphatic System Disorders</b>				
Anaemia*	1608 (36.8%)	631 (14.4%)	0 (0%)	Very Common
Lymphopenia*, <sup>k</sup>	145 (3.3%)	63 (1.4%)	0 (0%)	Common
Neutropenia*, <sup>a</sup>	1565 (35.8%)	1070 (24.5%)	6 (0.1%)	Very Common
Thrombocytopenia*, <sup>‡,b</sup>	1211 (27.7%)	479 (11.0%)	1 (< 0.1%)	Very Common
Leucopenia*, <sup>i</sup>	571 (13.1%)	245 (5.6%)	0 (0%)	Very Common
<b>Endocrine Disorders</b>				
Hypothyroidism*, <sup>‡,c</sup>	586 (13.4)	9 (0.2%)	0 (0%)	Very Common
Hyperthyroidism <sup>‡</sup>	193 (4.4%)	7 (0.2%)	0 (0%)	Common
Adrenal insufficiency <sup>‡,d</sup>	40 (0.9%)	8 (0.2%)	1 (< 0.1%)	Uncommon
Hypophysitis <sup>‡,e</sup>	13 (0.3%)	5 (0.1%)	0 (0%)	Uncommon
<b>Gastrointestinal Disorders</b>				
Constipation*	1123 (25.7%)	24 (0.5%)	0 (0%)	Very Common
Stomatitis*	351 (8.0%)	23 (0.5%)	0 (0%)	Common
<b>General Disorders and Administration Site Conditions</b>				
Peripheral oedema*	451 (10.3%)	11 (0.3%)	0 (0%)	Very Common
<b>Infections and Infestations</b>				
Lung infection*, <sup>h</sup>	564 (12.9%)	226 (5.2%)	26 (0.6%)	Very Common
<b>Investigations</b>				
Blood alkaline phosphatase increased	200 (4.6%)	26 (0.6%)	0 (0%)	Common
<b>Metabolism and Nutrition Disorders</b>				
Hypomagnesemia*, <sup>j</sup>	403 (9.2%)	22 (0.5%)	0 (0%)	Common
<b>Nervous System Disorders</b>				
Dizziness*	408 (9.3%)	9 (0.2%)	0 (0%)	Common
Dysgeusia*	269 (6.2%)	0 (0.0%)	0 (0%)	Common
Peripheral neuropathy*, <sup>f</sup>	1007 (23.0%)	107 (2.4%)	0 (0%)	Very Common
Syncope*	68 (1.6%)	36 (0.8%)	0 (0%)	Common

System Organ Class/ADR (MedDRA preferred term)	Atezolizumab + Combination Treatments (n = 4371)			
	All Grades (%)	Grade 3-4 (%)	Grade 5 (%)	Frequency (All Grades)
<b>Renal and Urinary Disorders</b>				
Nephritis <sup>‡,1</sup>	23 (0.5%)	15 (0.3%)	0 (0%)	Uncommon
Proteinuria <sup>*,g</sup>	359 (8.2%)	61 (1.4%)	0 (0%)	Common
<b>Respiratory, Thoracic and Mediastinal Disorders</b>				
Dysphonia <sup>*</sup>	236 (5.4%)	4 (< 0.1%)	0 (0%)	Common
Nasopharyngitis <sup>o</sup>	442 (10.1%)	1 (< 0.1%)	0 (0%)	Very Common
<b>Skin and Subcutaneous Tissue Disorders</b>				
Alopecia <sup>n</sup>	1152 (26.4%)	3 (< 0.1%)	0 (0%)	Very Common
Severe cutaneous adverse reactions <sup>p</sup>	27 (0.6%)	8 (0.2%)	0 (0%)	Uncommon
<b>Vascular Disorders</b>				
Hypertension <sup>*,m</sup>	611 (14.0%)	258 (5.9%)	0 (0%)	Very Common

\* ADR occurring at a frequency difference of  $\geq 5\%$  (All grades) or  $\geq 2\%$  (Grades 3-4) compared to the control arm

‡ Observed rate in the combination represents a clinically relevant difference in comparison to atezolizumab monotherapy

a. Includes reports of neutropenia, decreased neutrophil count, febrile neutropenia, neutropenic sepsis, granulocytopenia. Fatal cases of febrile neutropenia have been observed when Tecentriq is given in combination with bevacizumab, paclitaxel and carboplatin.

b. Includes reports of thrombocytopenia, decreased platelet count

c. Includes reports of hypothyroidism, increased blood thyroid stimulating hormone, decreased blood thyroid stimulating hormone, autoimmune thyroiditis, goitre, thyroiditis, decreased free thyroxine, decreased free tri-iodothyronine, thyroid disorder, increased free thyroxine, increased thyroxine, decreased tri-iodothyronine, increased free tri-iodothyronine, abnormal blood thyroid stimulating hormone, euthyroid sick syndrome, myxoedema coma, abnormal thyroid function test, decreased thyroxine, abnormal tri-iodothyronine, silent thyroiditis, chronic thyroiditis

d. Includes reports of adrenal insufficiency, decreased cortisol, acute adrenocortical insufficiency, secondary adrenocortical insufficiency, abnormal adrenocorticotrophic hormone stimulation test, Addison's disease, adrenalitis, adrenocorticotrophic hormone deficiency

e. Includes reports of hypophysitis, hypopituitarism and temperature regulation disorder

f. Includes reports of peripheral neuropathy, peripheral sensory neuropathy, polyneuropathy, herpes zoster, peripheral motor neuropathy, autoimmune neuropathy, neuralgic amyotrophy, peripheral sensorimotor neuropathy, axonal neuropathy, lumbosacral plexopathy, neuropathic arthropathy, toxic neuropathy, peripheral nerve infection

g. Includes reports of proteinuria, protein urine present, haemoglobinuria, nephrotic syndrome, urine abnormality, albuminuria

h. Includes reports of pneumonia, bronchitis, lower respiratory tract infection, tracheobronchitis, infective exacerbation of chronic obstructive airways disease, infectious pleural effusion, paraneoplastic pneumonia, atypical pneumonia, lung abscess, pleural infection, pyopneumothorax

i. Includes reports of decreased white blood cell count, leucopenia

j. Includes reports of hypomagnesaemia, decreased blood magnesium

k. Includes reports of lymphopenia, decreased lymphocyte count

l. Includes reports of nephritis, tubulointerstitial nephritis, autoimmune nephritis, allergic nephritis, glomerulonephritis, nephrotic syndrome, mesangioproliferative glomerulonephritis

- <sup>m</sup>. Includes reports of hypertension, increased blood pressure, hypertensive crisis, increased blood pressure systolic, diastolic hypertension, blood pressure inadequately controlled, hypertensive retinopathy
- <sup>n</sup>. Includes reports of alopecia, madarosis, alopecia areata, alopecia totalis, hypotrichosis
- <sup>o</sup>. Includes reports of nasopharyngitis, nasal congestion and rhinorrhoea
- <sup>p</sup>. Includes reports of dermatitis bullous, exfoliative rash, erythema multiforme, dermatitis exfoliative generalised, toxic skin eruption, Stevens-Johnson syndrome (SJS), drug reaction with eosinophilia and systemic symptoms (DRESS), toxic epidermal necrolysis (TEN), and cutaneous vasculitis (cases of SJS and DRESS have been reported in studies outside the pooled dataset).

One patient treated with intravenous Tecentriq in combination with carboplatin and etoposide in Study GO30081 (IMpower133) experienced Grade 3 anaphylaxis and discontinued treatment with Tecentriq.

### **Additional information for selected adverse reactions**

The data below reflect information for significant adverse reactions for atezolizumab monotherapy. Details for the significant adverse reactions for atezolizumab when given in combination are presented if clinically relevant differences were noted in comparison to atezolizumab monotherapy. See sections 4.2 *Dose and method of administration* and 4.4 *Special warnings and precautions for use* for management of the following:

#### *Immune-mediated pneumonitis*

Pneumonitis occurred in 2.7% (87/3178) of patients who received atezolizumab monotherapy. Of the 87 patients, one event was fatal. The median time to onset was 3.4 months (range: 0.1 to 24.8 months). The median duration was 1.4 months (range 0 to 21.2<sup>+</sup> months; <sup>+</sup> denotes a censored value). Pneumonitis led to discontinuation of atezolizumab in 12 (0.4%) patients. Pneumonitis requiring the use of corticosteroids occurred in 1.6% (51/3178) of patients receiving atezolizumab.

#### *Immune-mediated hepatitis*

Hepatitis occurred in 2.0% (62/3178) of patients who received atezolizumab monotherapy. Of the 62 patients, two events were fatal. The median time to onset was 1.5 months (range 0.2 to 18.8 months). The median duration was 2.1 months (range 0 to 22.0<sup>+</sup> months; <sup>+</sup> denotes a censored value). Hepatitis led to discontinuation of atezolizumab in 6 (0.2%) patients. Hepatitis requiring the use of corticosteroids occurred in 0.6% (18/3178) of patients receiving atezolizumab.

#### *Immune-mediated colitis*

Colitis occurred in 1.1% (34/3178) of patients who received atezolizumab. The median time to onset was 4.7 months (range 0.5 to 17.2 months). The median duration was 1.2 months (range 0.1 to 17.8<sup>+</sup> months; <sup>+</sup> denotes a censored value). Colitis led to discontinuation of atezolizumab in 8 (0.3%) patients. Colitis requiring the use of corticosteroids occurred in 0.6% (19/3178) of patients receiving atezolizumab.

#### *Immune-mediated endocrinopathies*

##### *Thyroid disorders*

Hypothyroidism occurred in 5.2% (164/3178) of patients who received atezolizumab monotherapy. The median time to onset was 4.9 months (range 0 to 31.3 months).

Hyperthyroidism occurred in 0.9% (30/3178) of patients who received atezolizumab monotherapy. The median time to onset was 2.1 months (range 0.7 to 15.7 months). The median duration was 2.6 months (range: 0<sup>+</sup> to 17.1<sup>+</sup> months; <sup>+</sup> denotes a censored value).

Hyperthyroidism occurred in 4.9% (23/473) of patients who received atezolizumab in combination with carboplatin and nab-paclitaxel. Hyperthyroidism led to discontinuation in 1 (0.2%) patient.

#### *Adrenal insufficiency*

Adrenal insufficiency occurred in 0.3% (11/3178) of patients who received atezolizumab monotherapy. The median time to onset was 5.5 months (range 0.1 to 19.0 months). The median duration was 16.8 months (range 0 to 16.8 months). Adrenal insufficiency led to discontinuation of atezolizumab in 1 (< 0.1%) patient. Adrenal insufficiency requiring the use of corticosteroids occurred in 0.3% (9/3178) of patients receiving atezolizumab.

Adrenal insufficiency occurred in 1.5% (7/473) of patients who received atezolizumab in combination with carboplatin and nab-paclitaxel. Adrenal insufficiency requiring the use of corticosteroids occurred in 0.8% (4/473) of patients receiving atezolizumab in combination with carboplatin and nab-paclitaxel.

#### *Hypophysitis*

Hypophysitis occurred in < 0.1% (2/3178) of patients who received atezolizumab monotherapy. The median time to onset was 7.2 months (range: 0.8 to 13.7 months). One patient required the use of corticosteroids and treatment with atezolizumab was discontinued.

Hypophysitis occurred in 0.8% (3/393) of patients who received atezolizumab with bevacizumab, paclitaxel and carboplatin. The median time to onset was 7.7 months (range: 5.0 to 8.8 months). Two patients required the use of corticosteroids. Hypophysitis led to the discontinuation of treatment in one patient.

#### *Diabetes mellitus*

Diabetes mellitus occurred in 0.3% (10/3178) of patients who received atezolizumab monotherapy. The median time to onset was 4.2 months (range 0.1 to 9.9 months). The median duration was 1.6 months (range: 0.1 to 15.2<sup>+</sup> months; <sup>+</sup> denotes a censored value). Diabetes mellitus led to the discontinuation of atezolizumab in 3 (< 0.1%) patients.

#### *Immune-mediated meningoencephalitis*

Meningoencephalitis occurred in 0.4% (14/3178) of patients who received atezolizumab monotherapy. The median time to onset was 0.5 months (range 0 to 12.5 months). The median duration was 0.7 months (range 0.2 to 14.5<sup>+</sup> months; <sup>+</sup> denotes a censored value). Meningoencephalitis requiring the use of corticosteroids occurred in 0.2% (6/3178) of patients receiving atezolizumab and led to discontinuation of atezolizumab in 4 (0.1%) patients.

#### *Immune-mediated neuropathies*

##### *Guillain-Barré syndrome and demyelinating polyneuropathy*

Guillain-Barré syndrome and demyelinating polyneuropathy, occurred in 0.2% (5/3178) of patients who received atezolizumab monotherapy. The median time to onset was 7.0 months (range: 0.6 to 8.1 months). The median duration was 8.0 months (0.6 to 8.3<sup>+</sup> months; <sup>+</sup> denotes a censored value). Guillain-Barré syndrome led to the discontinuation of atezolizumab in 1 (< 0.1%) patient. Guillain-Barré syndrome requiring the use of corticosteroids occurred in < 0.1% (2/3178) of patients receiving atezolizumab.

##### *Facial paresis*

Facial paresis occurred in <0.1% (1/3178) of patients who received atezolizumab monotherapy. The time to onset was 0.95 months. The duration was 1.1 months. The event did not require the use of corticosteroids and the event did not lead to the discontinuation of atezolizumab.



### Immune-mediated myelitis

Myelitis occurred in <0.1% (1/3178) of patients who received atezolizumab monotherapy. The time to onset was 0.76 months. The event required the use of corticosteroids but did not lead to the discontinuation of atezolizumab.

### Immune-mediated pancreatitis

Pancreatitis, including amylase increased and lipase increased, occurred in 0.6% (18/3178) of patients who received atezolizumab monotherapy. The median time to onset was 5.0 months (range 0.3 to 16.9 months). The median duration was 0.8 months (range 0.1 to 12.0<sup>+</sup> months; <sup>+</sup> denotes a censored value). Pancreatitis led to discontinuation of atezolizumab in 3 (<0.1%) patients. Pancreatitis requiring the use of corticosteroids occurred in 0.1% (4/3178) of patients receiving atezolizumab.

### Haemophagocytic lymphohistiocytosis

Haemophagocytic lymphohistiocytosis (HLH) occurred in <0.1% (1/3178) of patients who received atezolizumab monotherapy. The time to onset was 1.6 months. The duration was 1.4 months. HLH led to discontinuation of atezolizumab in 1 (<0.1%) patient. The patient did not require the use of corticosteroids.

### Immune-mediated myocarditis

Myocarditis occurred in <0.1% (2/8000) of patients across all atezolizumab clinical trials in multiple tumour types and treatment combinations. The time to onset was 18 and 33 days. Both patients required corticosteroids and discontinued atezolizumab.

### Immune-mediated pericardial disorders

Pericardial disorders occurred in 1.4% (45/3178) of patients who received atezolizumab monotherapy. The median time to onset was 1.4 months (range 0.2 to 17.5 months). The median duration was 1.4 months (range 0 to 19.3 months). Pericardial disorders led to discontinuation of atezolizumab in 3 (<0.1%) patients. Pericardial disorders requiring the use of corticosteroids occurred in 0.2% (7/3178) of patients.

### Immune-mediated myositis

Myositis occurred in 0.4% (13/3178) of patients who received atezolizumab monotherapy. The median time to onset was 5.1 months (range 0.7 to 11.0 months). The median duration was 5.0 months (range 0.7 to 22.6<sup>+</sup> months, <sup>+</sup> denotes a censored value). Myositis led to discontinuation of atezolizumab in 1 (<0.1%) patient. Seven (0.2%) patients required the use of corticosteroids.

### Immune-mediated nephritis

Nephritis occurred in <0.1% (3/3178) of patients who received atezolizumab monotherapy. The median time to onset was 13.1 months (range 9.0 to 17.5 months). The median duration was 2.8 months (range 0.5 to 9.5<sup>+</sup> months, <sup>+</sup> denotes a censored value). Nephritis led to discontinuation of atezolizumab in 2 (<0.1%) of patients. One patient required the use of corticosteroids.

### Immune-mediated severe cutaneous adverse reactions

Severe cutaneous adverse reactions (SCARs) occurred in 0.7% (22/3178) of patients who received atezolizumab monotherapy. The median time to onset was 5.9 months (range 0.1 to 15.5 months). The median duration of the first event was 1.6 months (range 0 to 22.1<sup>+</sup> months; <sup>+</sup> denotes a censored value). SCARs led to discontinuation of atezolizumab in 3 (<0.1%) patients. SCARs requiring the use of systemic corticosteroids occurred in 0.2% (6/3178) of patients receiving atezolizumab monotherapy.

### Use of Tecentriq in combination with bevacizumab, paclitaxel and carboplatin

In Study GO29436 (IMpower150), an overall higher frequency of adverse events was observed in the four-drug regimen of intravenous Tecentriq, bevacizumab, paclitaxel, and carboplatin compared to intravenous Tecentriq, paclitaxel and carboplatin, including Grade 3 and 4 events (63.6% compared to 57.5%), Grade 5 events (6.1% compared to 2.5%), adverse events of special interest to intravenous Tecentriq (52.4% compared to 48.0%), as well as adverse events leading to withdrawal of any study treatment (33.8% compared to 13.3%). Nausea, diarrhoea, stomatitis, fatigue, pyrexia, mucosal inflammation, decreased appetite, weight decreased, hypertension and proteinuria were reported higher ( $\geq 5\%$  difference) in patients receiving intravenous Tecentriq in combination with bevacizumab, paclitaxel and carboplatin. Other clinically significant adverse events which were observed more frequently in the intravenous Tecentriq, bevacizumab, paclitaxel, and carboplatin arm were epistaxis, haemoptysis, cerebrovascular accident, including fatal events.

### **Immunogenicity**

As with all therapeutic proteins, there is a potential for immunogenicity. The detection of antibody formation is highly dependent on the sensitivity and specificity of the assay. Additionally, the observed incidence of antibody (including neutralising antibody) positivity in an assay may be influenced by several factors including assay methodology, sample handling, timing of sample collection, concomitant medications, and underlying disease. For these reasons, comparison of the incidence of antibodies to atezolizumab with the incidence of antibodies to other products may be misleading.

### Intravenous Tecentriq

Across multiple phase II and III studies with intravenous atezolizumab, 13.1% to 54.1% of patients developed treatment-emergent anti-drug antibodies (ADAs) and 4.3% to 27.5% of patients developed neutralising antibodies (NABs). The median time to ADA onset ranged from 3 weeks to 5 weeks.

A decrease in exposure (9% increase in clearance) was observed in ADA-positive patients compared to ADA-negative patients; however, this effect on exposure is not expected to be clinically meaningful given the flat exposure-response relationship and adequate target exposure achieved regardless of ADA status.

Patients who developed treatment emergent ADAs tended to have overall poorer health and disease characteristics at baseline. Exploratory analyses adjusting for imbalances in baseline health and disease characteristics were conducted to assess the effect of ADA on efficacy. These analyses did not exclude possible attenuation of efficacy benefit in patients who develop ADA compared to patients who did not develop ADA.

Across pooled datasets for patients treated with atezolizumab monotherapy and with combination therapies, the rates of adverse events (AEs) which have been observed for the ADA-positive population compared to the ADA-negative population is presented in Table 6. Available data do not allow conclusions to be drawn on possible patterns of adverse drug reactions or their causal relationship with ADAs.

**Table 6. Overview of Safety by ADA Status in Atezolizumab intravenous (IV) Monotherapy and Combination Therapy Pooled Populations**

	Atezolizumab monotherapy pooled population (n=2972)	Atezolizumab combination therapy pooled population (n=2285)
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Total number of patients with:	ADA-negative (n=1905)	ADA-positive (n=1067)	ADA-negative (n=1681)	ADA-positive (n=604)
Grade 3-4 AEs	42.6%	48.6%	60.9%	63.9%
Serious Adverse Events (SAEs)	36.0%	42.2%	35.6%	43.9%
AEs leading to treatment withdrawal	6.5%	6.2%	18.4%	22.8%

### Tecentriq SC

In IMscin001, the incidence of treatment-emergent anti-atezolizumab antibodies in patients treated with Tecentriq SC and intravenous Tecentriq was comparable (19.5% [43/221] and 13.9% [15/108], respectively). Anti-atezolizumab antibody status did not appear to have a clinically relevant impact on atezolizumab PK, efficacy or safety. The incidence of treatment-emergent anti-rHuPH20 (vorhialuronidase alfa) antibodies in patients treated with Tecentriq SC was 5.4% (12/224). The clinical relevance of the development of anti-rHuPH20 antibodies after treatment with Tecentriq SC is unknown.

### **Laboratory abnormalities**

All identified laboratory abnormalities were reported as ADRs. See section 4.4 *Special warnings and precautions for use, Immune-mediated hepatitis and Immune-mediated endocrinopathies* for management of the following:

- AST, ALT, bilirubin
- thyroid function.

### **Postmarketing experience**

The following adverse reactions have been identified during post-approval use of atezolizumab (see Table 7). Because reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate the frequency or establish a causal relationship to drug exposure.

**Table 7. Adverse Drug Reactions from Postmarketing Surveillance**

<b>System Organ Class/ ADR (MedDRA Preferred Term)</b>	<b>Frequency</b>
<b>Blood and Lymphatic System Disorders</b>	
Haemophagocytic lymphohistiocytosis <sup>a</sup>	Rare
Autoimmune haemolytic anaemia (AIHA)	Unknown
<b>Cardiac Disorders</b>	
Pericardial disorders <sup>a,b</sup>	Common
<b>General disorders and administration site conditions</b>	
Systemic inflammatory response syndrome (SIRS)	Unknown
<b>Musculoskeletal and connective tissue disorders</b>	
Arthritis (including immune-mediated arthritis)	Unknown
Sjögrens syndrome	Unknown
Tenosynovitis	Unknown
<b>Neoplasms benign, malignant and unspecified</b>	
Sarcoidosis	Unknown
<b>Nervous System Disorders</b>	
Facial paresis <sup>a</sup>	Rare

Myelitis <sup>a</sup>	Rare
<b>Renal and Urinary Disorders</b>	
Renal failure	Unknown

<sup>a</sup>Reported from postmarketing experience outside the pooled dataset. The frequency is based on the program-wide exposure.

<sup>b</sup>Includes reports of pericarditis, pericardial effusion, cardiac tamponade and pericarditis constrictive

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after registration of the medicinal product is important. It allows continued monitoring of the benefit-risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions at [www.tga.gov.au/reporting-problems](http://www.tga.gov.au/reporting-problems).

### 4.9 Overdose

There is no information on overdose with Tecentriq SC.

For information on the management of overdose, contact the Poison Information Centre on 131126 (Australia).

## 5 PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

#### Mechanism of action

Binding of PD-L1 to the PD-1 and B7.1 receptors found on T cells suppresses cytotoxic T-cell activity through the inhibition of T-cell proliferation and cytokine production. PD-L1 may be expressed on tumour cells and tumour-infiltrating immune cells, and can contribute to the inhibition of the anti-tumour immune response in the microenvironment.

Atezolizumab is an Fc-engineered humanised immunoglobulin G1 (IgG1) monoclonal antibody that directly binds to PD-L1 and blocks interactions with the PD-1 and B7.1 receptors, releasing PD-L1/PD-1 pathway-mediated inhibition of the immune response, including reactivating the anti-tumour immune response. Atezolizumab leaves the PD-L2/PD-1 interaction intact, allowing PD-L2/PD-1 mediated inhibitory signals to persist. In syngeneic mouse tumour models, blocking PD-L1 activity resulted in decreased tumour growth.

#### *PD-L1 expression by immunohistochemistry*

The VENTANA PD-L1 (SP142) Assay has been validated to detect PD-L1 expression in tumour-infiltrating immune cells (IC) and tumour cells (TC). The VENTANA PD-L1 (SP263) Assay has been validated to detect PD-L1 expression in TC.

The test detects the presence of any discernible PD-L1 staining of any intensity.

Scoring for tumour cells was defined as TC0 (< 1%), TC1 (≥ 1% and < 5%), TC2 (≥ 5% and < 50%), and TC3 (≥ 50%). Scoring for tumour-infiltrating immune cells was defined as IC0 (< 1%), IC1 (≥ 1% and < 5%), IC2 (≥ 5% and < 10%) and IC3 (≥ 10%).

### Clinical trials

This section presents clinical experience from studies investigating the use of Tecentriq monotherapy or combination therapy in early-stage and metastatic NSCLC, SCLC, UC, and

HCC. With the exception of IMscin001, all of the studies were conducted using intravenous Tecentriq. The use of Tecentriq SC for the indications studied in intravenous Tecentriq is based on the pharmacokinetic non-inferiority of subcutaneously administered atezolizumab to intravenously administered atezolizumab, as demonstrated in IMscin001 (see 5.2 *Pharmacokinetic properties*).

## Tecentriq SC

### *IMscin001 (BP40657)*

A phase Ib/III, open-label, multi-centre, international, randomised study, IMscin001, was conducted to evaluate the pharmacokinetics, efficacy and safety of Tecentriq SC compared with intravenous Tecentriq in patients with locally advanced or metastatic NSCLC who have not been exposed to cancer immunotherapy (CIT) and for whom prior platinum-based therapy has failed. IMscin001 was designed to demonstrate non-inferiority of the atezolizumab Cycle 1 (pre-dose Cycle 2) serum  $C_{\text{trough}}$  and model-predicted AUC from 0 to 21 days at Cycle 1 of atezolizumab SC compared with intravenous atezolizumab (co-primary endpoint). Secondary endpoints included efficacy [progression free survival (PFS), objective response rate (ORR), overall survival (OS), duration of response (DOR)] and patient reported outcomes.

In Part 2 (Phase III), a total of 371 patients were enrolled and randomised to receive either 1875 mg of Tecentriq SC every 3 weeks or 1200 mg of intravenous Tecentriq every 3 weeks. No dose reduction was allowed.

Patients were excluded if they had a history of autoimmune disease; active or corticosteroid-dependent brain metastases, administration of a live, attenuated vaccine within 4 weeks prior to randomisation; administration of systemic immunostimulatory agents within 4 weeks or systemic immunosuppressive medications within 2 weeks prior to randomisation.

The demographics and baseline disease characteristics were generally balanced between the treatment arms. The median age was 64 years (range: 27 to 85), and 69% of patients were male. The majority of patients were White (67%). Approximately two-thirds of patients (65%) had non-squamous disease, 5% had known EGFR mutation, 2% had known ALK rearrangements, 40% were PD-L1 positive ( $TC \geq 1\%$  and/or  $IC \geq 1\%$ ), 16% had non-active CNS metastases at baseline, 26% had an ECOG PS of 0, 74% had an ECOG PS of 1, and most patients were current or previous smokers (70%). 80% received one prior therapeutic regimen.

Non-inferiority of the exposure from atezolizumab in Tecentriq SC compared to intravenous atezolizumab was demonstrated (see section 5.2 *Pharmacokinetic properties*). Other key results are summarised below. At the time of primary analysis, the median survival follow-up was 4.7 months and OS and DOR results were immature. There were 86 (35%) deaths in the Tecentriq SC arm and 37 (30%) deaths in the intravenous atezolizumab arm.

**Table 8. Summary of Efficacy from IMscin001**

<b>Efficacy endpoint</b>	<b>Tecentriq SC</b>	<b>Intravenous Tecentriq</b>
<b><i>Investigator-assessed PFS (RECIST v1.1)*</i></b>	n=247	n=124
No. of PFS events (%)	168 (68%)	84 (68%)
Median duration of PFS (months)	2.8	2.9
95% CI**	(2.1, 3.1)	(1.7, 4.2)
<b><i>Investigator-assessed ORR (RECIST v1.1)*</i></b>	n=245	n=124
No. of responders (%)	29 (12%)	12 (9.7%)
95% CI***	(8.1, 17)	(5.1, 16)

CI=confidence interval; ORR=objective response rate; PFS=progression-free survival; RECIST=Response Evaluation Criteria in Solid Tumours v1.1

\*descriptive analyses

\*\*95% CI was calculated using the standard error derived from Greenwood's formula.

\*\*\*95% CI for rate was constructed using the Clopper-Pearson method.

### Intravenous Tecentriq

#### Non-small cell lung cancer

##### Early-stage NSCLC

##### IMpower010 (GO29527)

A phase III, open-label, multi-centre, randomised study, GO29527 (IMpower010), was conducted to evaluate the efficacy and safety of Tecentriq for the adjuvant treatment of patients with stage IB (tumours  $\geq 4$  cm) – IIIA NSCLC (per the Union for International Cancer Control/American Joint Committee on Cancer staging system, 7th edition). A total of 1280 enrolled patients had complete tumour resection and were eligible to receive up to 4 cycles of cisplatin-based chemotherapy. The cisplatin-based chemotherapy regimens are described in Table 9.

**Table 9. Chemotherapy Intravenous Treatment Regimens in Study IMpower010**

<b>Adjuvant cisplatin-based chemotherapy</b>  Cisplatin 75 mg/m <sup>2</sup> IV on Day 1 of each 21 day cycle with one of the following treatment regimens:	Vinorelbine 30 mg/m <sup>2</sup> IV, Day 1 and 8
	Docetaxel 75 mg/m <sup>2</sup> IV, Day 1
	Gemcitabine 1250 mg/m <sup>2</sup> IV, Day 1 and 8
	Pemetrexed 500 mg/m <sup>2</sup> IV, Day 1

After completion of cisplatin-based chemotherapy (up to four cycles), a total of 1005 patients were randomised in a 1:1 ratio to receive Tecentriq (Arm A) or best supportive care (BSC) (Arm B). Tecentriq was administered as a fixed dose of 1200 mg by IV infusion every 3 weeks for 16 cycles unless there was disease recurrence or unacceptable toxicity. Randomisation was stratified by sex, stage of disease, histology, and PD-L1 expression.

Patients were excluded if they had a history of autoimmune disease; administration of a live, attenuated vaccine within 28 days prior to randomisation; administration of systemic immunostimulatory agents within 4 weeks or systemic immunosuppressive medications within 2 weeks prior to randomisation. Tumour assessments were conducted at baseline of the

randomisation phase and every 4 months for the first year following Cycle 1, Day 1 and then every 6 months until year five, then annually thereafter.

The median age was 62 years (range: 26 to 84), and 67% of patients were male. The majority of patients were White (73%), and 24% were Asian. Most patients were current or previous smokers (78%) and baseline ECOG performance status in patients was 0 (55%) or 1 (44%). Overall, 12% of patients had stage IB, 47% had stage II and 41% had stage IIIA disease. As measured by the VENTANA PD-L1 (SP263) Assay, 55% of patients had tumours with PD-L1 expression  $\geq 1\%$  on TC and 26% of patients had tumours with PD-L1 expression  $\geq 50\%$  on TC.

The primary efficacy outcome measure was disease-free survival (DFS) as assessed by the investigator. DFS was defined as the time from the date of randomisation to the date of occurrence of any of the following: first documented recurrence of disease, new primary NSCLC, or death due to any cause, whichever occurred first. DFS was assessed hierarchically in the following patient populations: stage II-IIIa NSCLC with PD-L1 expression  $\geq 1\%$  TC, all randomised patients with stage II-IIIa NSCLC, and all randomised ITT patients. DFS in the PD-L1  $\geq 50\%$  TC stage II-IIIa population and OS in the ITT population were pre-specified key secondary objectives.

At the time of the interim DFS analysis, the study met its primary endpoint and demonstrated a statistically significant improvement in DFS in the Tecentriq arm compared to the BSC arm in the PD-L1  $\geq 1\%$  TC stage II - IIIa patient population. The median follow-up time was approximately 32 months.

In the secondary objective analysis of stage II-IIIa patients with PD-L1 TC  $\geq 50\%$ , a clinically meaningful improvement in DFS was shown in the Tecentriq arm compared to the BSC arm with an unstratified HR of 0.43 (95% CI: 0.27, 0.68). The OS data were immature at the time of the DFS interim analysis.

The key efficacy results are summarised in Table 10. The Kaplan-Meier curve for DFS for the PD-L1  $\geq 50\%$  TC stage II-IIIa patient population is presented in Figure 1.

**Table 10. Summary of efficacy from GO29527 (IMpower010) in PD-L1 expression  $\geq 1\%$  TC,  $\geq 50\%$  TC, and 1 – 49% TC stage II-IIIa patient populations**

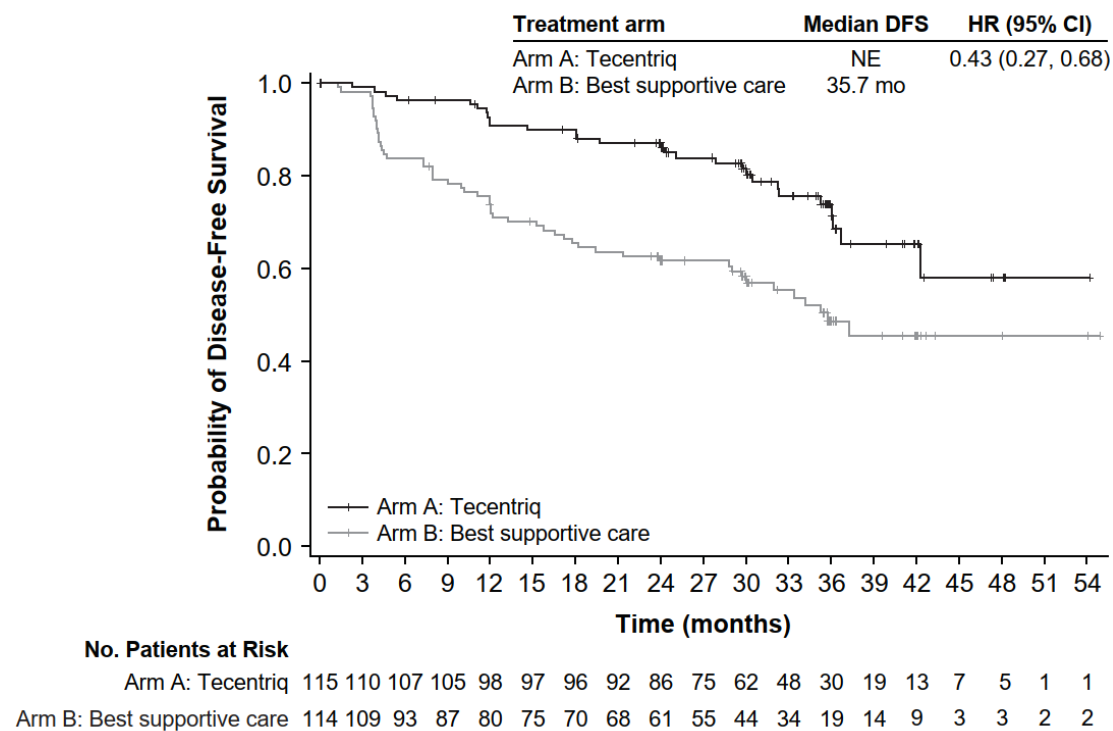
<b>Efficacy endpoints</b>	<b>Arm A</b>	<b>Arm B</b>
<b>Investigator-assessed DFS</b>	<b>(Tecentriq)</b>	<b>(Best Supportive Care)</b>
<b>Primary Endpoint</b>		
<b><i>DFS in PD-L1 <math>\geq 1\%</math> TC Stage II-IIIa</i></b>	n = 248	n = 228
No. of events (%)	88 (35.5)	105 (46.1)
Median duration of DFS (months)	NE	35.3
95% CI	36.1, NE	29.0, NE
Stratified* hazard ratio (95% CI)	0.66 (0.50, 0.88)	
p-value	0.004	
<b>Secondary Endpoint</b>		
<b><i>DFS in PD-L1 <math>\geq 50\%</math> TC Stage II-IIIa</i></b>	n = 115	n = 114

<b>Efficacy endpoints</b>	<b>Arm A</b> (Tecentriq)	<b>Arm B</b> (Best Supportive Care)
<b>Investigator-assessed DFS</b>		
No. of events (%)	28 (24.3%)	52 (45.6%)
Median duration of DFS (months)	NE	35.7
95% CI	42.3, NE	29.7, NE
Unstratified hazard ratio (95% CI)	0.43 (0.27, 0.68)	
<b>Exploratory Endpoint</b>		
<b>DFS in PD-L1 1-49% TC Stage II-IIIa</b>	n = 133	n = 114
No. of events (%)	60 (45.1%)	53 (46.5%)
Median duration of DFS (months)	32.8	31.4
95% CI	29.4, NE	24.0, NE
Unstratified hazard ratio (95% CI)	0.87 (0.60, 1.26)	

DFS = Disease-free survival; CI = confidence interval; NE = not estimable

\* Stratified by stage of disease, sex, and histology

**Figure 1. Kaplan-Meier Plot of Disease-Free Survival in the PD-L1 expression  $\geq$  50% TC stage II - IIIa patient population**



*IL metastatic non-squamous NSCLC*

*IMpower150 (GO29436)*

A phase III, open-label, multicentre, international, randomised study, IMpower150 (GO29436), was conducted to evaluate the efficacy and safety of Tecentriq in combination with paclitaxel



and carboplatin, with or without bevacizumab, in chemotherapy-naïve patients with metastatic non-squamous NSCLC.

Patients were excluded if they had history of autoimmune disease, administration of a live, attenuated vaccine within 28 days prior to randomisation, administration of systemic immunostimulatory agents within 4 weeks or systemic immunosuppressive medications within 2 weeks prior to randomisation, active or untreated CNS metastases, clear tumour infiltration into the thoracic great vessels or clear cavitation of pulmonary lesions, as seen on imaging. Tumour assessments were conducted every 6 weeks for the first 48 weeks following Cycle 1, Day 1 and then every 9 weeks thereafter. Tumour specimens were evaluated for PD-L1 expression on tumour cells (TC) and tumour-infiltrating immune cells (IC) using the VENTANA PD-L1 (SP142) Assay and the results were used to define the PD-L1 expression subgroups for the analyses described below.

A total of 1202 patients were enrolled and were randomised (1:1:1) to receive one of the treatment regimens described in Table 11. Randomisation was stratified by sex, presence of liver metastases and PD-L1 tumour expression on TC and IC.

**Table 11. Intravenous treatment regimens (IMpower150)**

Treatment regimen	Induction (Four or Six 21-day cycles)	Maintenance (21-day cycles)
A	Tecentriq <sup>a</sup> (1200 mg) + paclitaxel (200 mg/m <sup>2</sup> ) <sup>b,c</sup> + carboplatin <sup>c</sup> (AUC 6)	Tecentriq <sup>a</sup> (1,200 mg)
B	Tecentriq <sup>a</sup> (1200 mg) + bevacizumab <sup>d</sup> (15 mg/kg) + paclitaxel (200 mg/m <sup>2</sup> ) <sup>b,c</sup> + carboplatin <sup>c</sup> (AUC 6)	Tecentriq <sup>a</sup> (1,200 mg) + bevacizumab <sup>d</sup> (15 mg/kg)
C	Bevacizumab <sup>d</sup> (15 mg/kg) + paclitaxel (200 mg/m <sup>2</sup> ) <sup>b,c</sup> + carboplatin <sup>c</sup> (AUC 6)	Bevacizumab <sup>d</sup> (15 mg/kg)

<sup>a</sup> Tecentriq is administered until loss of clinical benefit as assessed by the investigator

<sup>b</sup> The paclitaxel starting dose for patients of Asian race/ethnicity was 175 mg/m<sup>2</sup> due to higher overall level of haematologic toxicities in patients from Asian countries compared with those from non-Asian countries

<sup>c</sup> Paclitaxel and carboplatin are administered until completion of 4 or 6 cycles, or progressive disease, or unacceptable toxicity whichever occurs first

<sup>d</sup> Bevacizumab is administered until progressive disease or unacceptable toxicity

The demographics and baseline disease characteristics of the study population were well balanced between the treatment arms. The median age was 63 years (range: 31 to 90), and 60% of patients were male. The majority of patients were white (82%). Approximately 10% of patients had known EGFR mutation, 4% had known ALK rearrangements, 14% had liver metastasis at baseline, and most patients were current or previous smokers (80%). Baseline Eastern Cooperative Oncology Group (ECOG) performance status was 0 (43%) or 1 (57%). 51% of patients' tumours had PD-L1 expression of  $\geq 1\%$  TC or  $\geq 1\%$  IC and 49% of patients' tumours had PD-L1 expression of  $< 1\%$  TC and  $< 1\%$  IC.

At the time of the final analysis for PFS, patients had a median follow up time of 15.3 months. The ITT population, including patients with EGFR mutations or ALK rearrangements who should have been previously treated with tyrosine kinase inhibitors, demonstrated clinically meaningful PFS improvement in Arm B as compared to Arm C (HR of 0.61, 95% CI: 0.52, 0.72; median PFS 8.3 vs. 6.8 months).

At the time of the interim OS analysis, patients had a median follow-up of 19.7 months. The key results from this analysis as well as from the updated PFS analysis in the ITT population

are summarised in Tables 12 and 13. The Kaplan-Meier curve for OS in the ITT population is presented in Figure 2. Figure 3 summarises the results of OS in the ITT and PD-L1 subgroups. Updated PFS results are also presented in Figures 4 and 5.

**Table 12. Summary of updated efficacy in the ITT population (IMpower150)**

<b>Efficacy endpoint</b>	<b>Arm A (Tecentriq + Paclitaxel + Carboplatin)</b>	<b>Arm B (Tecentriq + Bevacizumab + Paclitaxel + Carboplatin)</b>	<b>Arm C (Bevacizumab + Paclitaxel + Carboplatin)</b>
<b>Secondary Endpoints<sup>#</sup></b>			
<b>Investigator-assessed PFS (RECIST v1.1)*</b>	n = 402	n = 400	n = 400
No. of events (%)	330 (82.1%)	291 (72.8%)	355 (88.8%)
Median duration of PFS (months)	6.7	8.4	6.8
95% CI	(5.7, 6.9)	(8.0, 9.9)	(6.0, 7.0)
Stratified hazard ratio <sup>‡^</sup> (95% CI)	0.91 (0.78, 1.06)	0.59 (0.50, 0.69)	---
p-value <sup>1,2</sup>	0.2194	< 0.0001	
12-month PFS (%)	24	38	20
<b>OS interim analysis*</b>	n = 402	n = 400	n = 400
No. of deaths (%)	206 (51.2%)	192 (48.0%)	230 (57.5%)
Median time to events (months)	19.5	19.8	14.9
95% CI	(16.3, 21.3)	(17.4, 24.2)	(13.4, 17.1)
Stratified hazard ratio <sup>‡^</sup> (95% CI)	0.85 (0.71, 1.03)	0.76 (0.63, 0.93)	---
p-value <sup>1,2</sup>	0.0983	0.006	
6-month OS (%)	84	85	81
12-month OS (%)	66	68	61
<b>Investigator-assessed Overall Best Response<sup>3*</sup> (RECIST 1.1)</b>	n = 401	n = 397	n = 393
No. of responders (%)	163 (40.6%)	224 (56.4%)	158 (40.2%)
95% CI	(35.8, 45.6)	(51.4, 61.4)	(35.3, 45.2)
No. of complete response (%)	8 (2.0%)	11 (2.8%)	3 (0.8%)
No. of partial response (%)	155 (38.7%)	213 (53.7%)	155 (39.4%)
<b>Investigator-assessed DOR* (RECIST v1.1)</b>	n = 163	n = 224	n = 158
Median in months	8.3	11.5	6.0
95% CI	(7.1, 11.8)	(8.9, 15.7)	(5.5, 6.9)

<sup>#</sup> Primary efficacy endpoints were PFS and OS and they were analysed in the ITT-wild-type (WT) population, i.e. excluding patients with EGFR mutations or ALK rearrangements.

<sup>1</sup> Based on the stratified log-rank test

<sup>2</sup> For informational purposes; in the ITT population, comparisons between Arm B and Arm C as well as between Arm A and Arm C were not formally tested yet as per the pre-specified analysis hierarchy

<sup>3</sup> Overall best response for complete response and partial response

<sup>‡</sup> Stratified by sex, presence of liver metastases and PD-L1 tumour expression on TC and IC

<sup>^</sup> The Arm C is the comparison group for all hazard ratios

\* Updated PFS analysis and interim OS analysis at clinical cut-off 22 January 2018

PFS = progression-free survival; RECIST = Response Evaluation Criteria in Solid Tumours v1.1. CI = confidence interval; DOR = duration of response; OS = overall survival.

**Table 13. Summary of updated efficacy for Arm A vs Arm B in the ITT population (IMpower150)**

<b>Efficacy endpoint</b>	<b>Arm A (Tecentriq + paclitaxel + carboplatin)</b>	<b>Arm B (Tecentriq + bevacizumab + paclitaxel + carboplatin)</b>
<b>Investigator-assessed PFS (RECIST v1.1)*</b>	n = 402	n = 400
No. of events (%)	330 (82.1%)	291 (72.8%)
Median duration of PFS (months)	6.7	8.4
95% CI	(5.7, 6.9)	(8.0, 9.9)
Stratified hazard ratio <sup>‡^</sup> (95% CI)		0.67 (0.57, 0.79)
p-value <sup>1,2</sup>		< 0.0001
<b>OS interim analysis*</b>	n = 402	n = 400
No. of deaths (%)	206 (51.2%)	192 (48.0%)
Median time to events (months)	19.5	19.8
95% CI	(16.3, 21.3)	(17.4, 24.2)
Stratified hazard ratio <sup>‡^</sup> (95% CI)		0.90 (0.74, 1.10)
p-value <sup>1,2</sup>		0.3000

<sup>1</sup> Based on the stratified log-rank test

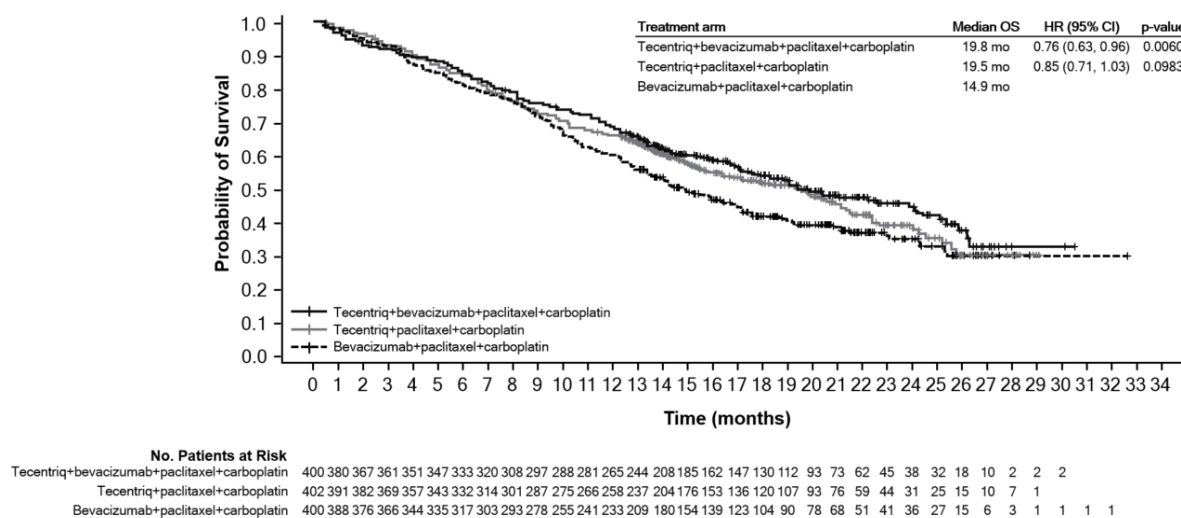
<sup>2</sup> For informational purposes; in the ITT population, comparisons between Arm A and Arm B were not included in the pre-specified analysis hierarchy

<sup>‡</sup> Stratified by sex, presence of liver metastases and PD-L1 expression on TC and IC

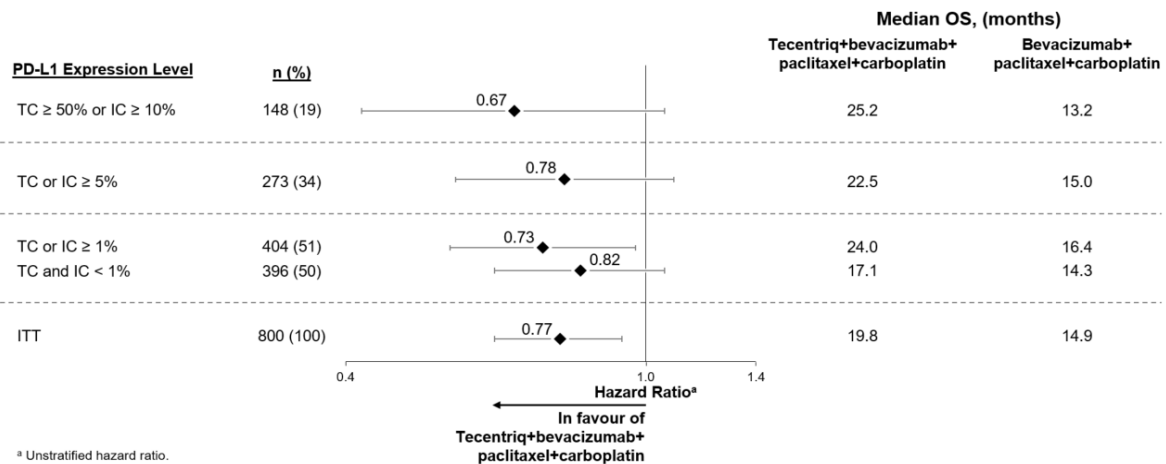
\* Updated PFS analysis and interim OS analysis at clinical cut-off 22 January 2018

<sup>^</sup> The Arm A is the comparison group for all hazard ratios

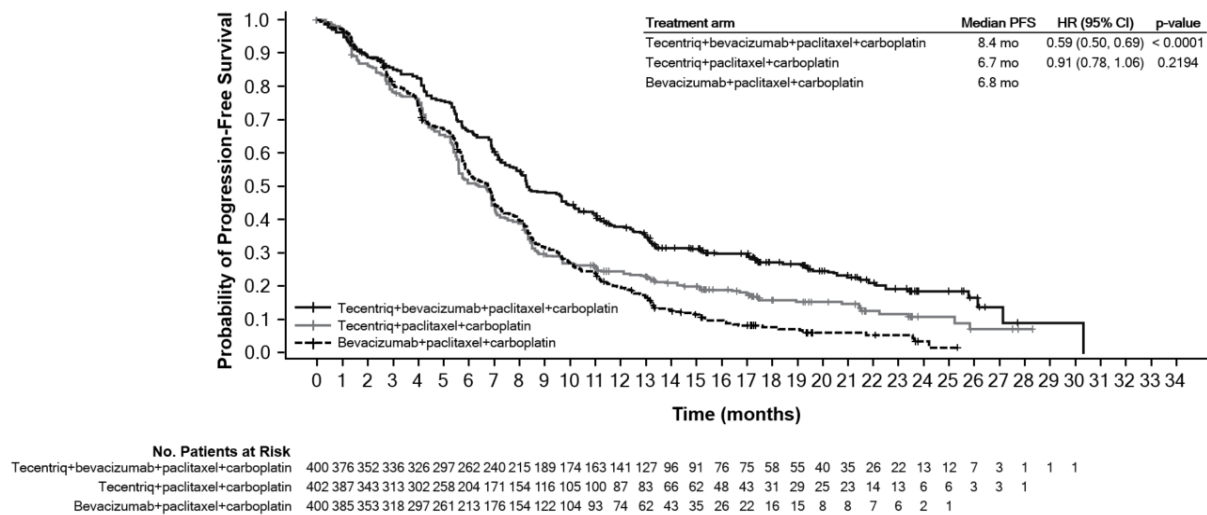
**Figure 2. Kaplan-Meier curve for overall survival in the ITT population (IMpower150)**



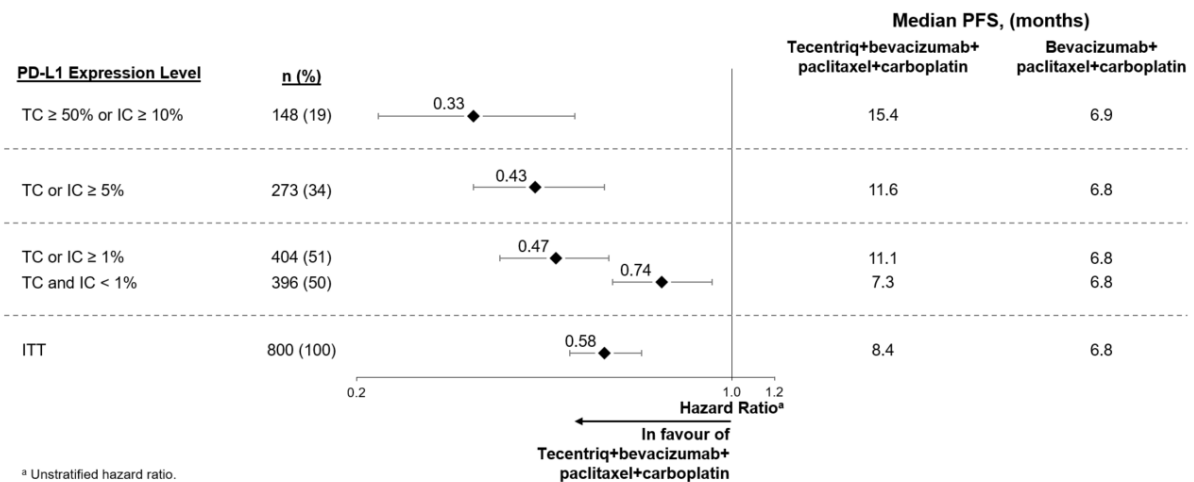
**Figure 3. Forest plot of overall survival by PD-L1 expression in the ITT population, Arm B vs C (IMpower150)**



**Figure 4. Kaplan-Meier curve for PFS in the ITT population (IMpower150)**



**Figure 5. Forest plot of progression free survival by PD-L1 expression in the ITT population, Arm B vs C (IMpower150)**



In Arm B as compared to Arm C, pre-specified subgroup analyses from the interim OS analysis showed an OS improvement for patients with EGFR mutations or ALK rearrangements (hazard ratio [HR] of 0.54, 95% CI: 0.29, 1.03; median OS not reached vs. 17.5 months), and liver metastases (HR of 0.52, 95% CI: 0.33, 0.82; median OS 13.3 vs 9.4 months). PFS improvements were also shown in patients with EGFR mutations or ALK rearrangements (HR of 0.55, 95% CI: 0.35, 0.87; median PFS 10.0 vs. 6.1 months) and liver metastases (HR of 0.41, 95% CI: 0.26, 0.62; median PFS 8.2 vs. 5.4 months). OS results were similar for patients aged < 65 and ≥ 65 subgroups, respectively. Data for patients ≥ 75 years of age are too limited to draw conclusions on this population. For all subgroup analyses, formal statistical testing was not planned.

#### *IMpower130 (GO29537)*

A Phase III, open-label, randomised study, IMpower130 (GO29537) was conducted to evaluate the efficacy and safety of Tecentriq in combination with nab-paclitaxel and carboplatin, in chemotherapy-naïve patients with metastatic non-squamous NSCLC. Patients including those with EGFR or ALK genomic tumour aberrations, were enrolled and were randomised in a 2:1 ratio to receive one of the treatment regimens described in Table 14. Randomisation was stratified by sex, presence of liver metastases and PD-L1 tumour expression on tumour cells (TC) and tumour infiltrating cells (IC). Patients in treatment regimen B were able to crossover and receive Tecentriq monotherapy following disease progression.

**Table 14. Intravenous treatment regimens in IMpower130**

<b>Treatment Regimen</b>	<b>Induction (four or six 21-Day Cycles)</b>	<b>Maintenance (21-Day Cycles)</b>
A	Tecentriq (1200 mg) <sup>a</sup> + nab-paclitaxel (100mg/m <sup>2</sup> ) <sup>b,c</sup> + carboplatin (AUC 6) <sup>c</sup>	Tecentriq (1200mg) <sup>a</sup>
B	Nab-paclitaxel (100 mg/m <sup>2</sup> ) <sup>b</sup> + Carboplatin (AUC 6) <sup>c</sup>	Best supportive care or pemetrexed

<sup>a</sup> Tecentriq is administered until loss of clinical benefit as assessed by investigator

<sup>b</sup> Nab-paclitaxel is administered on days 1, 8, and 15 of each cycle

<sup>c</sup> Nab-paclitaxel and carboplatin is administered until completion of 4 - 6 cycles, or progressive disease or unacceptable toxicity whichever occurs first

Patients were excluded if they had history of autoimmune disease, administration of live, attenuated vaccine within 28 days prior to randomisation, administration of immunostimulatory agents within 4 weeks or systemic immunosuppressive medications within 2 weeks prior to randomisation, and active or untreated CNS metastases. Tumour assessments were conducted every 6 weeks for the first 48 weeks following Cycle 1, then every 9 weeks thereafter.

The demographics and baseline disease characteristics of the study population (n = 723) were well balanced between the treatment arms. The median age was 64 years (range 18 to 86). The majority of the patients were male (57%), white (90%). 14.8% of patients had liver metastases at baseline, and most patients were current or previous smokers (88%). The majority of patients had ECOG performance status of 0 or 1, with the latter group representing 58.6% of the patients.

The primary analysis was conducted in all patients, excluding those with EGFR or ALK genomic tumour aberrations (n = 679). Patients had a median survival follow up time of 18.6 months. Improvements in OS and PFS were demonstrated with Tecentriq + nab-paclitaxel + carboplatin compared to the control. The key results are summarised in Table 15 and Kaplan-Meier curves for OS and PFS are presented in Figures 6 and 8, respectively.

All PD-L1 subgroups, regardless of expression, derived benefit in terms of OS and PFS; the results are summarised in Figure 7 and 9. Consistent OS and PFS benefit was demonstrated in all other pre-specified subgroups, with the exception of patients with liver metastases who did not show improved OS with Tecentriq, nab-paclitaxel and carboplatin, compared to nab-paclitaxel and carboplatin (HR of 1.04, 95% CI: 0.63,1.72).

Approximately 66% of patients in the nab-paclitaxel and carboplatin arm received any anti-cancer therapy after disease progression compared to 39% in the Tecentriq, nab-paclitaxel and carboplatin arm. These included approximately 59% of patients in the nab-paclitaxel and carboplatin arm received any cancer immunotherapy after disease progression, which includes Tecentriq as crossover (41% of all patients), compared to 7.3% in the Tecentriq, nab-paclitaxel and carboplatin arm.

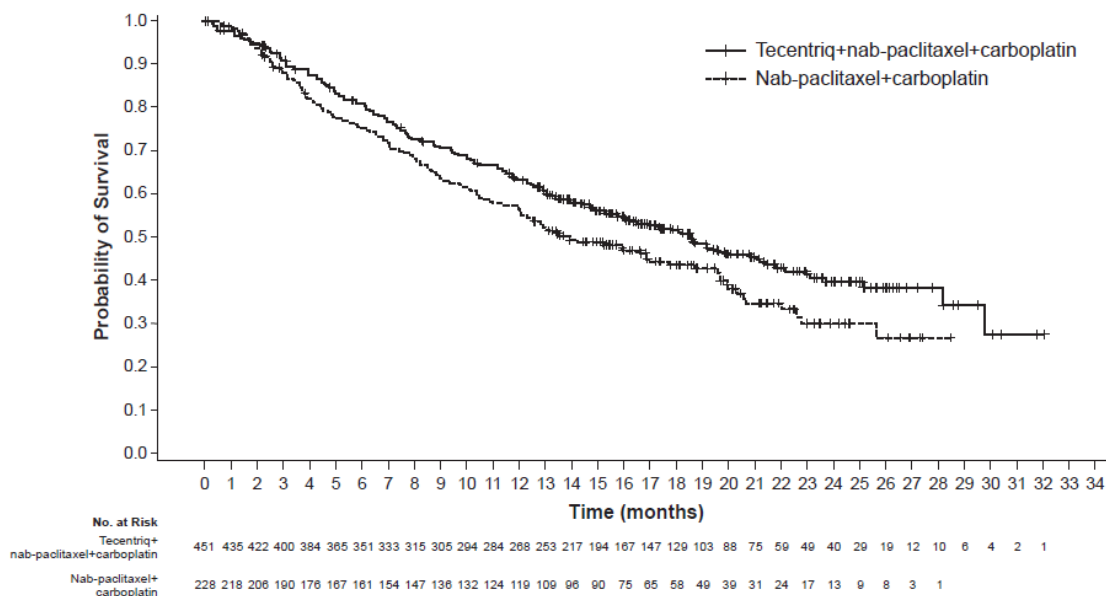
**Table 15. Summary of efficacy from IMpower130 in the primary analysis population**

<b>Key efficacy endpoints</b>	<b>Tecentriq + nab-paclitaxel + carboplatin</b>	<b>nab-paclitaxel + carboplatin</b>
<b><i>Co-primary Endpoints</i></b>		
<b>OS</b>	n = 451	n = 228
No. of deaths (%)	226 (50.1%)	131 (57.5%)
Median time to events (months)	18.6	13.9
95% CI	(16.0, 21.2)	(12.0, 18.7)
Stratified hazard ratio <sup>‡</sup> (95% CI)	0.79 (0.64, 0.98)	
p-value	0.033	
12-month OS (%)	63	55
<b><i>Investigator-assessed PFS (RECIST v1.1)</i></b>		
	n = 451	n = 228
No. of events (%)	347 (76.9)	198 (86.8)
Median duration of PFS (months)	7.0	5.5
95% CI	(6.2, 7.3)	(4.4, 5.9)
Stratified hazard ratio <sup>‡</sup> (95% CI)	0.64 (0.54, 0.77)	
p-value	< 0.0001	
12-month PFS (%)	29	14
<b><i>Other Endpoints</i></b>		
<b><i>Investigator-assessed ORR (RECIST 1.1)</i></b>		
	n = 447	n = 226
No. of confirmed responders (%)	220 (49.2%)	72 (31.9%)
95% CI	(44.5, 54.0)	(25.8, 38.4)
No. of complete response (%)	11 (2.5%)	3 (1.3%)
No. of partial response (%)	209 (46.8%)	69 (30.5%)
<b><i>Investigator-assessed confirmed DOR (RECIST 1.1)</i></b>		
	n = 220	n = 72
Median in months	8.4	6.1
95% CI	(6.9, 11.8)	(5.5, 7.9)

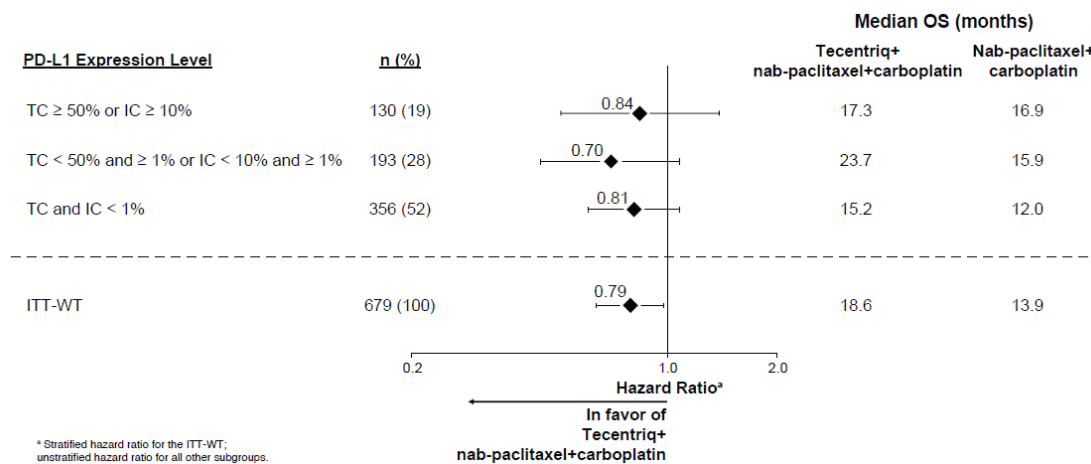
<sup>‡</sup> Stratified by sex and PD-L1 tumour expression on TC and IC

PFS = progression-free survival; RECIST = Response Evaluation Criteria in Solid Tumours v1.1.; CI = confidence interval; ORR = objective response rate; DOR = duration of response; OS = overall survival

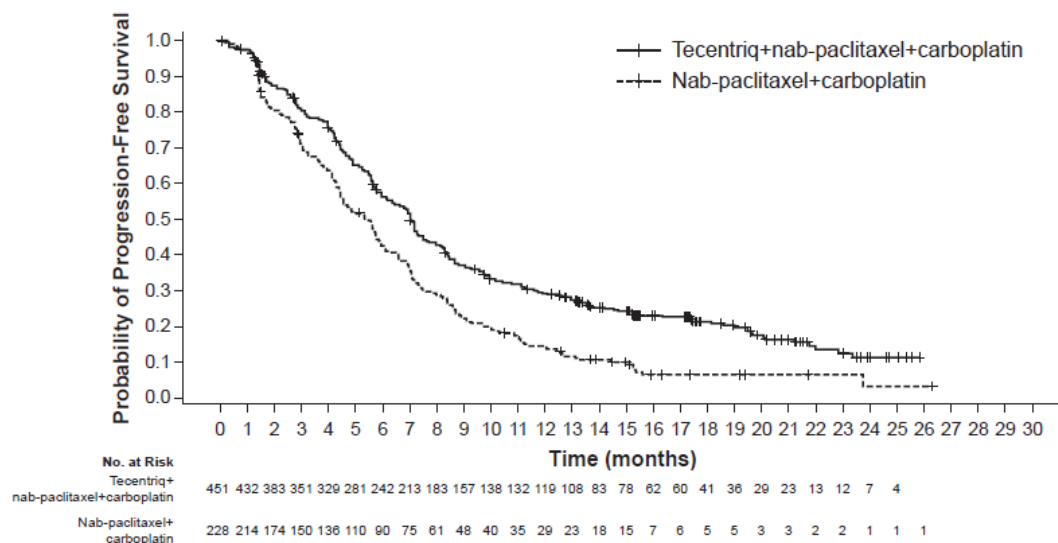
**Figure 6. Kaplan-Meier Plot for Overall Survival (IMpower130)**



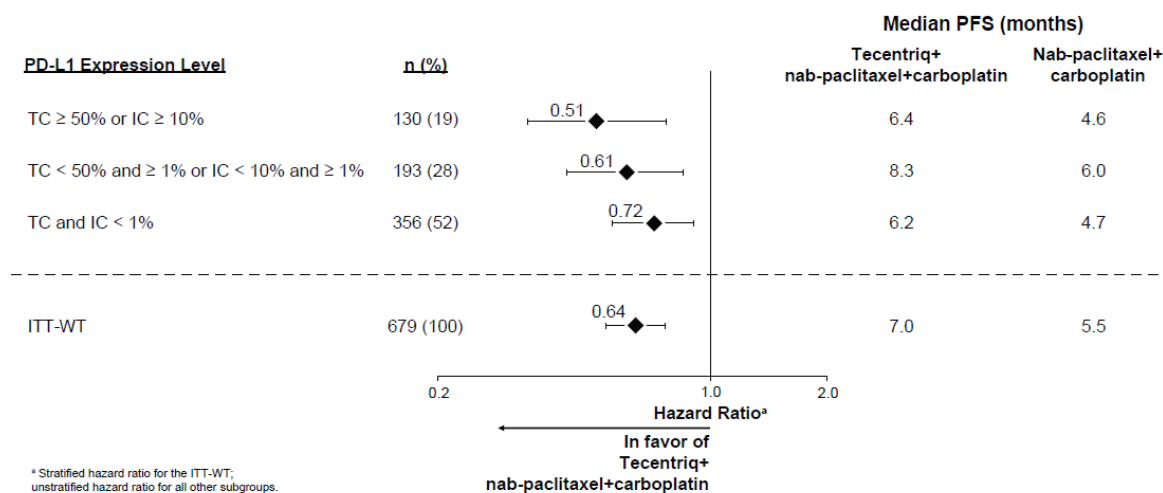
**Figure 7. Forest Plot of Overall Survival by PD-L1 expression (IMpower130)**



**Figure 8. Kaplan-Meier Plot for Progression Free Survival (IMpower130)**



**Figure 9. Forest Plot of Progression Free Survival by PD-L1 expression (IMpower130)**



The study also evaluated Physical Function and Patient Reported Treatment-Related Symptoms using the EORTC QLQ-C30 and EORTC QLQ-LC13 measures. On average, patients who received Tecentriq with nab-paclitaxel and carboplatin reported high functioning and no clinically meaningful worsening in treatment-related symptoms. There was no difference in delay of lung-related symptoms (dyspnoea, cough and chest pain) however patients receiving Tecentriq, nab-paclitaxel and carboplatin reported less worsening of these symptoms over time.

## 2L NSCLC

### OAK (GO28915)

A phase III, open-label, multicentre, international, randomised study, OAK (GO28915), was conducted to evaluate the efficacy and safety of Tecentriq compared with docetaxel in patients with locally advanced or metastatic NSCLC who have progressed during or following a platinum-containing regimen. A total of 1225 patients were enrolled, with the primary analysis population consisting of the first 850 randomised patients. Eligible patients were stratified by PD-L1 expression status in tumour-infiltrating immune cells (IC), by the number of prior chemotherapy regimens, and by histology. Patients were randomised (1:1) to receive either Tecentriq or docetaxel. This study excluded patients who had a history of autoimmune disease, active or corticosteroid-dependent brain metastases, administration of a live, attenuated vaccine within 28 days prior to enrolment, administration of systemic immunostimulatory agents within 4 weeks or systemic immunosuppressive medications within 2 weeks prior to enrolment. Tumour assessments were conducted every 6 weeks for the first 36 weeks, and every 9 weeks thereafter.

The demographic and baseline disease characteristics of the primary analysis population were well balanced between the treatment arms. The median age was 64 years (range: 33 to 85), and 61% of patients were male. The majority of patients were white (70%). Approximately three-quarters of patients had non-squamous disease (74%), 10% had known EGFR mutation, 0.2% had known ALK rearrangements, 10% had CNS metastases at baseline, and most patients were current or previous smokers (82%). Baseline ECOG performance status was 0 (37%) or 1 (63%). Seventy five percent of patients received only one prior platinum-based therapeutic regimen.

Tecentriq was administered as a fixed dose of 1200 mg by IV infusion every 3 weeks. No dose reduction was allowed. Patients were treated until loss of clinical benefit as assessed by the investigator. Docetaxel was administered at 75 mg/m<sup>2</sup> by IV infusion on day 1 of each 21 day



cycle until disease progression. For all treated patients, the median duration of treatment was 2.1 months for the docetaxel arm and 3.4 months for the Tecentriq arm.

The primary efficacy endpoint was OS. The key results of this study with a median survival follow-up of 21 months are summarised in Table 16. Kaplan-Meier curves for OS in the ITT population are presented in Figure 10. Figure 11 summarises the results of OS in the ITT and PD-L1 subgroups, demonstrating OS benefit with Tecentriq in all subgroups, including the TC0/IC0 subgroup (PD-L1 expression < 1% in TC and IC).

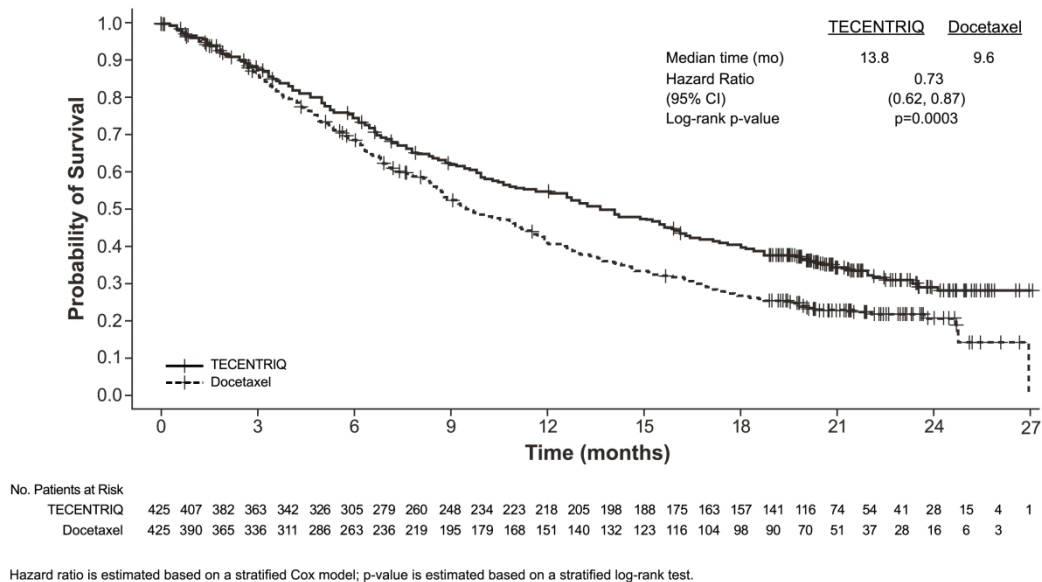
**Table 16. Summary of Efficacy in the Primary Analysis Population (OAK)**

<b>Efficacy endpoints</b>	<b>Tecentriq</b>	<b>Docetaxel</b>
<b><i>Primary Efficacy Endpoint</i></b>		
<b><i>OS</i></b>		
<b>All comers*</b>	n = 425	n = 425
No. of deaths (%)	271 (64%)	298 (70%)
Median time to events (months)	13.8	9.6
95% CI	(11.8, 15.7)	(8.6, 11.2)
Stratified <sup>#</sup> hazard ratio (95% CI)	0.73 (0.62, 0.87)	
p-value**	0.0003	
12-month OS (%)	218 (55%)	151 (41%)
18-month OS (%)	157 (40%)	98 (27%)
<b><i>TC1/2/3 or IC1/2/3</i></b>		
<b>All comers*</b>	n = 241	n = 222
No. of deaths (%)	151 (63%)	149 (67%)
Median time to events (months)	15.7	10.3
95% CI	(12.6, 18.0)	(8.8, 12.0)
Stratified <sup>#</sup> hazard ratio (95% CI)	0.74 (0.58, 0.93)	
p-value**	0.0102	
12-month OS (%)	58%	43%
18-month OS (%)	44%	29%
<b><i>Secondary Endpoints</i></b>		
<b><i>Investigator-assessed PFS (RECIST v1.1)</i></b>		
<b>All comers*</b>	n = 425	n = 425
No. of events (%)	380 (89%)	375 (88%)
Median duration of PFS (months)	2.8	4.0
95% CI	(2.6, 3.0)	(3.3, 4.2)
Stratified <sup>#</sup> hazard ratio (95% CI)	0.95 (0.82, 1.10)	
<b><i>Investigator-assessed ORR (RECIST v1.1)</i></b>		
<b>All comers*</b>	n = 425	n = 425
No. of responders (%)	58 (14%)	57 (13%)
95% CI	(10.5, 17.3)	(10.3, 17.0)
<b><i>Investigator-assessed DOR (RECIST v1.1)</i></b>		
<b>All comers*</b>	n = 58	n = 57
Median in months	16.3	6.2
95% CI	(10.0, NE)	(4.9, 7.6)

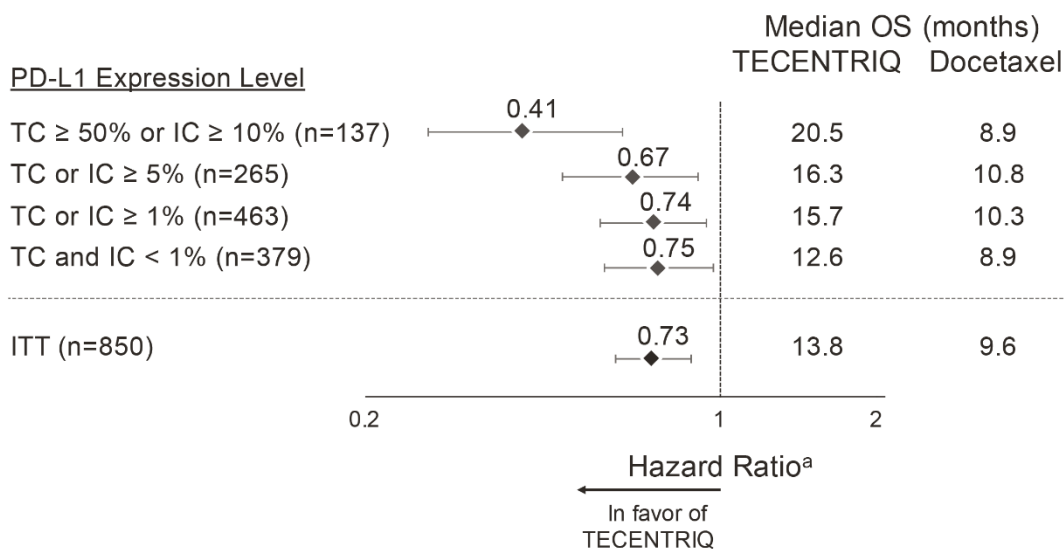
CI = confidence interval; DOR = duration of objective response; IC = tumour-infiltrating immune cells; NE = not estimable; ORR = objective response rate; OS = overall survival; PFS = progression-

free survival; RECIST = Response Evaluation Criteria in Solid Tumours v1.1; TC = tumour cells.  
 \* All comers refers to the primary analysis population consisting of the first 850 randomised patients  
 # Stratified by PD-L1 expression in ICs, the number of prior chemotherapy regimens, and histology  
 \*\* Based on the stratified log-rank test

**Figure 10. Kaplan-Meier Plot for Overall Survival in the Primary Analysis Population (all comers) (OAK)**



**Figure 11. Forest Plot of Overall Survival by PD-L1 Expression in the Primary Analysis Population (OAK)**



<sup>a</sup>Stratified HR for ITT and TC or IC ≥ 1%. Unstratified HR for other subgroups

An improvement in OS was observed with Tecentriq compared to docetaxel in both non-squamous NSCLC patients (hazard ratio [HR] of 0.73, 95% CI: 0.60, 0.89; median OS of 15.6 vs. 11.2 months for Tecentriq and docetaxel, respectively) and squamous NSCLC patients (HR of 0.73, 95% CI: 0.54, 0.98; median OS of 8.9 vs. 7.7 months for Tecentriq and docetaxel, respectively). The observed OS improvement was consistently demonstrated across subgroups of patients including those with brain metastases at baseline (HR of 0.54, 95% CI: 0.31, 0.94; median OS of 20.1 vs. 11.9 months for Tecentriq and docetaxel respectively) and patients who

were never smokers (HR of 0.71, 95% CI: 0.47, 1.08; median OS of 16.3 vs. 12.6 months for Tecentriq and docetaxel, respectively). However, patients with EGFR mutations did not show improved OS with Tecentriq compared to docetaxel (HR of 1.24, 95% CI: 0.71, 2.18; median OS of 10.5 vs. 16.2 months for Tecentriq and docetaxel respectively).

Prolonged time to deterioration of patient-reported pain in chest as measured by the EORTC QLQ-LC13 was observed with Tecentriq compared with docetaxel (HR 0.71, 95% CI: 0.49, 1.05; median not reached in either arm). The time to deterioration in other lung cancer symptoms (i.e. cough, dyspnoea, and arm/shoulder pain) as measured by the EORTC QLQ-LC13 was similar between Tecentriq and docetaxel. The average global health status and functioning scores (i.e. physical, role, social, emotional, and cognitive) as measured by the EORTC QLQ-C30 did not show clinically meaningful deterioration over time for both treatment groups, suggesting maintained health-related quality of life and patient-reported functioning for patients remaining on treatment.

*POPLAR (GO28753)*

A phase II, multicentre, international, randomised, open-label, controlled study, POPLAR (GO28753) was conducted in patients with locally advanced or metastatic NSCLC who progressed during or following a platinum containing regimen, regardless of PD-L1 expression. The primary efficacy outcome was overall survival. A total of 287 patients were randomised 1:1 to receive either Tecentriq (1200 mg by intravenous infusion every 3 weeks until loss of clinical benefit) or docetaxel (75 mg/m<sup>2</sup> by intravenous infusion on day 1 of each 3 week cycle until disease progression). Randomisation was stratified by PD-L1 expression status on IC, by the number of prior chemotherapy regimens and by histology. An updated analysis with a total of 200 deaths observed and a median survival follow up of 22 months showed a median OS of 12.6 months in patients treated with Tecentriq, vs. 9.7 months in patients treated with docetaxel (HR of 0.69, 95% CI: 0.52, 0.92). ORR was 15.3% vs. 14.7% and median DOR was 18.6 months vs. 7.2 months for Tecentriq vs. docetaxel, respectively.

Intravenous Tecentriq

*Small cell lung cancer*

*IMpower133 (GO30081)*

A Phase I/III, randomised, multicentre, double-blind, placebo controlled study, IMpower133 (GO30081), was conducted to evaluate the efficacy and safety of Tecentriq in combination with carboplatin and etoposide in patients with chemotherapy-naïve ES-SCLC. A total of 403 patients were randomised (1:1) to receive one of the treatment regimens described in Table 17. Randomisation was stratified by sex, ECOG performance status, and presence of brain metastases.

This study excluded patients who had active or untreated CNS metastases; history of autoimmune disease; administration of live, attenuated vaccine within 4 weeks prior to randomisation; administration of systemic immunosuppressive medications within 1 week prior to randomisation. Tumour assessments were conducted every 6 weeks for the first 48 weeks following Cycle 1, Day 1 and then every 9 weeks thereafter. Patients treated beyond disease progression had tumour assessment conducted every 6 weeks until treatment discontinuation.

**Table 17. Intravenous treatment regimen in IMpower133**

Treatment regimen	Induction (four 21-day cycles)	Maintenance (21-day cycles)
-------------------	--------------------------------	-----------------------------

A	Tecentriq (1200 mg) <sup>a</sup> + carboplatin (AUC 5) <sup>b</sup> + etoposide (100 mg/m <sup>2</sup> ) <sup>b,c</sup>	Tecentriq (1200 mg) <sup>a</sup>
B	placebo + carboplatin (AUC 5) <sup>b</sup> + etoposide (100 mg/m <sup>2</sup> ) <sup>b,c</sup>	placebo

<sup>a</sup> Tecentriq is administered until loss of clinical benefit as assessed by investigator

<sup>b</sup> Carboplatin and etoposide is administered until completion of 4 cycles, or progressive disease or unacceptable toxicity whichever occurs first

<sup>c</sup> Etoposide is administered on day 1, 2 and 3 of each cycle

The demographic and baseline disease characteristics of the primary analysis population were well balanced between the treatment arms. The median age was 64 years (range: 26 to 90 years). The majority of patients were male (65%), white (80%), and 9% had brain metastases and most patients were current or previous smokers (97%). Baseline ECOG performance status was 0 (35%) or 1 (65%).

At the time of the primary analysis, patients had a median survival follow up time of 13.9 months. The key results are summarised in Table 18. Kaplan-Meier curves for OS and PFS are presented in Figure 12 and 13.

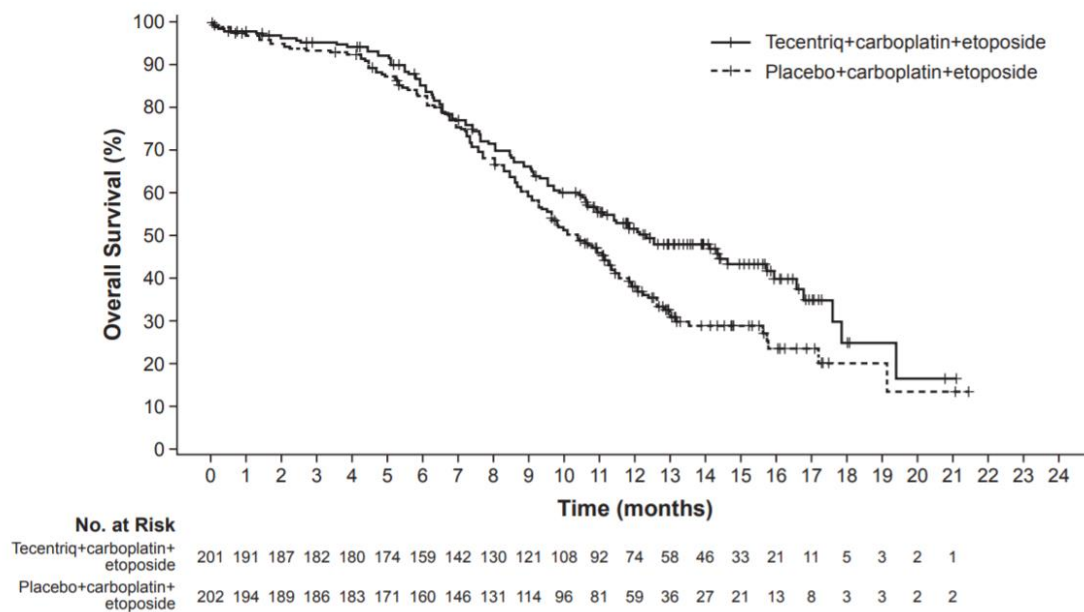
**Table 18. Summary of efficacy from IMpower133**

Key efficacy endpoints	Arm A (Tecentriq + carboplatin + etoposide)	Arm B (placebo + carboplatin + etoposide)
<b>Co-primary endpoints</b>		
<b>OS analysis</b>	n = 201	n = 202
No. of deaths (%)	104 (51.7%)	134 (66.3%)
Median time to events (months)	12.3	10.3
95% CI	(10.8, 15.9)	(9.3, 11.3)
Stratified hazard ratio <sup>‡</sup> (95% CI)	0.70 (0.54, 0.91)	
p-value	0.0069	
12-month OS (%)	51.7	38.2
<b>Investigator-assessed PFS (RECIST v1.1)</b>	n = 201	n = 202
No. of events (%)	171 (85.1%)	189 (93.6%)
Median duration of PFS (months)	5.2	4.3
95% CI	(4.4, 5.6)	(4.2, 4.5)
Stratified hazard ratio <sup>‡</sup> (95% CI)	0.77 (0.62, 0.96)	
p-value	0.0170	
6-month PFS (%)	30.9	22.4
12-month PFS (%)	12.6	5.4
<b>Secondary endpoints</b>		
<b>Investigator-assessed ORR (RECIST 1.1)</b>	n = 201	n = 202
No. of responders (%)	121 (60.2%)	130 (64.4%)
95% CI	(53.1, 67.0)	(57.3, 71.0)
No. of complete response (%)	5 (2.5%)	2 (1.0%)
No. of partial response (%)	116 (57.7%)	128 (63.4%)
<b>Investigator-assessed DOR (RECIST 1.1)</b>	n = 121	n = 130

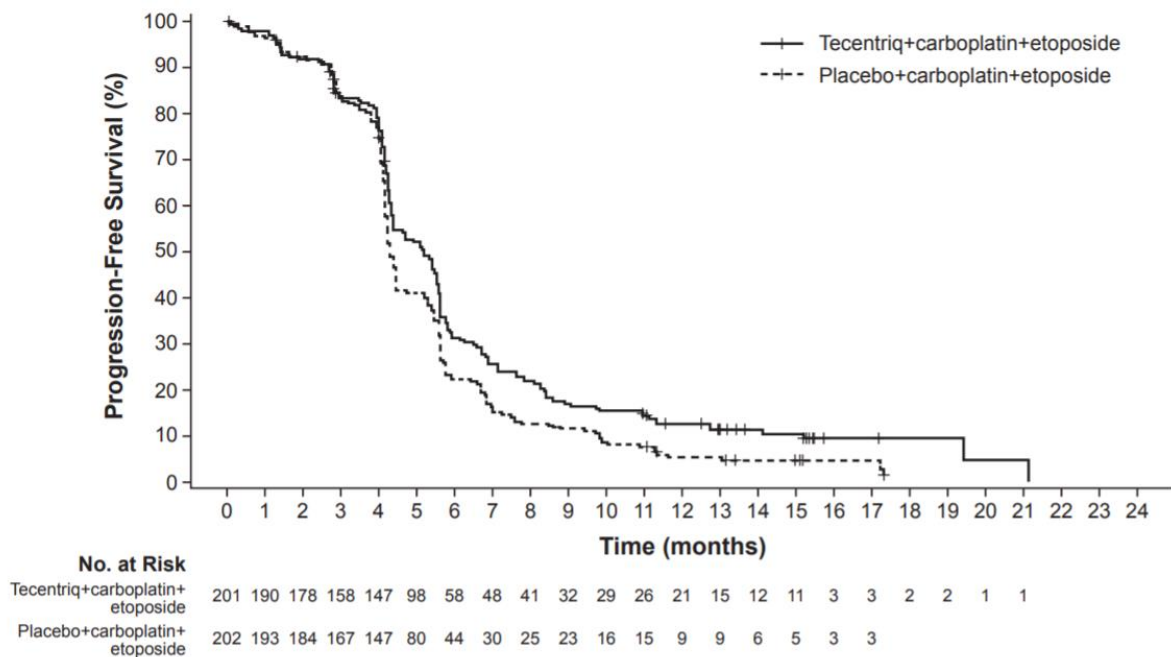
Key efficacy endpoints	Arm A (Tecentriq + carboplatin + etoposide)	Arm B (placebo + carboplatin + etoposide)
Median in months	4.2	3.9
95% CI	(4.1, 4.5)	(3.1, 4.2)

PFS = progression-free survival; RECIST = Response Evaluation Criteria in Solid Tumours v1.1.; CI = confidence interval; ORR = objective response rate; DOR = duration of response; OS = overall survival  
‡ Stratified by sex and ECOG performance status

**Figure 12. Kaplan-Meier plot of overall survival (IMpower133)**



**Figure 13. Kaplan-Meier plot of progression-free survival (IMpower133)**



## Intravenous Tecentriq

### Urothelial carcinoma

#### *IMvigor210 (GO29293)*

The efficacy of Tecentriq was investigated in IMvigor210 (Cohort 1) (GO29293), a multicentre, open-label, single-arm trial that included 119 patients with locally advanced or metastatic urothelial carcinoma who were ineligible for cisplatin-containing chemotherapy and were either previously untreated or had disease progression at least 12 months after neoadjuvant or adjuvant chemotherapy. Patients were considered cisplatin-ineligible if they met any one of the following criteria at study entry: impaired renal function [creatinine clearance (CLcr) of 30 to 59 mL/min], ECOG performance status (PS) of 2, hearing loss of  $\geq 25$  decibels (dB) at two contiguous frequencies, or Grades 2 to 4 peripheral neuropathy. This study excluded patients who had: a history of autoimmune disease; active or corticosteroid-dependent brain metastases; administration of a live, attenuated vaccine within 28 days prior to enrolment; or administration of systemic immunostimulatory agents within 6 weeks or systemic immunosuppressive medications within 2 weeks prior to enrolment.

Patients received Tecentriq 1200 mg as an intravenous infusion every 3 weeks until unacceptable toxicity or disease progression. Tumour response assessments were conducted every 9 weeks for the first 54 weeks and every 12 weeks thereafter. Major efficacy outcome measures included confirmed overall response rate (ORR) as assessed by independent review facility (IRF) using Response Evaluation Criteria in Solid Tumours (RECIST v1.1), duration of response (DoR) and overall survival (OS).

In this study, the median age was 73 years, 81% were male, and 91% were White. Thirty-five percent of patients had non-bladder urothelial carcinoma and 66% had visceral metastases. Eighty percent of patients had an ECOG PS of 0 or 1. Reasons for ineligibility for cisplatin containing chemotherapy were: 70% had impaired renal function, 20% had an ECOG PS of 2, 14% had a hearing loss of  $\geq 25$  dB, and 6% had Grades 2 to 4 peripheral neuropathy at baseline. Twenty percent of patients had disease progression following prior platinum-containing neoadjuvant or adjuvant chemotherapy.

Tumour specimens were evaluated prospectively using the VENTANA PD-L1 (SP142) Assay at a central laboratory, and the results were used to define subgroups for pre-specified analyses. Of the 119 patients, 27% were classified as having PD-L1 expression of  $\geq 5\%$  (defined as PD-L1 stained tumour-infiltrating immune cells [IC] covering  $\geq 5\%$  of the tumour area, IC2/3). The remaining 73% of patients were classified as having PD-L1 expression of  $< 5\%$  (PD-L1 stained tumour infiltrating IC covering  $< 5\%$  of the tumour area, IC0/1).

Among the 32 patients with PD-L1 expression of  $\geq 5\%$ , median age was 67 years, 81% were male, 19% female, and 88% were White. Twenty-eight percent of patients had non-bladder urothelial carcinoma and 56% had visceral metastases. Seventy-two percent of patients had an ECOG PS of 0 or 1. Reasons for ineligibility for cisplatin-containing chemotherapy were: 66% had impaired renal function, 28% had an ECOG PS of 2, 16% had a hearing loss  $\geq 25$  dB, and 9% had Grades 2 - 4 peripheral neuropathy at baseline. Thirty-one percent of patients had disease progression following prior platinum-containing neoadjuvant or adjuvant chemotherapy.

Confirmed ORR in all patients and the two PD-L1 subgroups are summarised in Table 19. The median follow-up time for this study was 14.4 months. In 24 patients with disease progression following neoadjuvant or adjuvant therapy, the ORR was 33% (95% CI: 16%, 55%).

**Table 19. Efficacy results from IMvigor210 Cohort 1**

	PD-L1 expression subgroups		
	All patients	PD-L1 expression of < 5% in ICs <sup>1</sup>	PD-L1 expression of ≥ 5% in ICs <sup>1</sup>
	n = 119	n = 87	n = 32
<b>Number of IRF-assessed confirmed responders</b>	28	19	9
ORR% (95% CI)	23.5% (16.2, 32.2)	21.8% (13.7, 32)	28.1% (13.8, 46.8)
Complete response (CR) (%)	6.7%	6.9%	6.3%
Partial response (PR) (%)	16.8%	14.9%	21.9%
<b>Median DoR, months (range)</b>	NR (3.7, 16.6+)	NR (3.7, 16.6+)	NR (8.1, 15.6+)

NR = not reached

+ Denotes a censored value

<sup>1</sup> PD-L1 expression in tumour-infiltrating immune cells (ICs)*IMvigor130 (WO30070)*

IMvigor130 (WO30070) is an ongoing multicentre, randomised study in previously untreated patients with metastatic urothelial carcinoma who are eligible for platinum-containing chemotherapy. The study contains three arms: Tecentriq monotherapy, Tecentriq with platinum-based chemotherapy (i.e., cisplatin or carboplatin with gemcitabine), and platinum-based chemotherapy alone (comparator). Both cisplatin-eligible and cisplatin-ineligible patients are included in the study. Tumour specimens were evaluated prospectively using the VENTANA PD-L1 (SP142) Assay at a central laboratory.

The independent Data Monitoring Committee (iDMC) for the study conducted a review of early data and found that patients classified as having PD-L1 expression of < 5% (IC0/1) when treated with Tecentriq monotherapy had decreased survival compared to those who received platinum-based chemotherapy. The iDMC recommended closure of the monotherapy arm to further accrual of patients with low PD-L1 expression, however, no other changes were recommended for the study, including any change of therapy for patients who had already been randomised to and were receiving treatment in the monotherapy arm.

Intravenous Tecentriq*Hepatocellular carcinoma**IMbrave150 (YO40245)*

A global phase III, randomised, multicentre, open-label study, IMbrave150 (YO40245) was conducted to evaluate the efficacy and safety of Tecentriq in combination with bevacizumab in patients with locally advanced or metastatic and/or unresectable HCC, who have not received prior systemic treatment. A total of 501 patients were randomised (2:1) to receive either Tecentriq 1200 mg and 15 mg/kg of bevacizumab every 3 weeks administered via IV infusion, or sorafenib 400 mg orally twice per day. Randomisation was stratified by geographic region (Asia excluding Japan vs. rest of world), macrovascular invasion and/or extrahepatic spread (presence vs. absence), baseline AFP (< 400 vs. ≥ 400 ng/mL) and ECOG performance status (0 vs. 1). Patients in both arms received treatment until loss of clinical benefit or unacceptable toxicity. Patients could discontinue either Tecentriq or bevacizumab (e.g., due to adverse events) and continue on single-agent therapy until loss of clinical benefit or unacceptable toxicity associated with the single-agent.

The study enrolled adults who were ECOG 0/1. Patients were required to be evaluated for the presence of varices within 6 months prior to treatment and were excluded if they had variceal bleeding within 6 months prior to treatment, untreated or incompletely treated varices with bleeding or high risk of bleeding. Patients were also excluded if they had Child-Pugh B or C cirrhosis; moderate or severe ascites; history of hepatic encephalopathy; a history of autoimmune disease; administration of a live, attenuated vaccine within 4 weeks prior to randomisation; administration of systemic immunostimulatory agents within 4 weeks, or systemic immunosuppressive medications within 2 weeks, prior to randomisation; untreated or corticosteroid-dependent brain metastases. Tumour assessments were performed every 6 weeks for the first 54 weeks and every 9 weeks thereafter.

The demographic and baseline disease characteristics of the study population were balanced between the treatment arms. The median age was 65 years (range: 26 to 88 years) and 83% were male. The majority of patients were Asian (57%) and White (35%); 40% were from Asia (excluding Japan). Approximately 75% of patients presented with macrovascular invasion and/or extrahepatic spread and 37% had a baseline AFP  $\geq$  400 ng/mL. Baseline ECOG performance status was 0 (62%) or 1 (38%). HCC risk factors were Hepatitis B virus infection in 48% of patients, Hepatitis C virus infection in 22% of patients, and non-viral disease in 31% of patients. HCC was categorised as Barcelona Clinic Liver Cancer (BCLC) stage C in 82% of patients, stage B in 16% of patients, and stage A in 3% of patients.

The co-primary efficacy endpoints were overall survival (OS) and independent review facility (IRF)-assessed progression free survival (PFS) according to RECIST v1.1. Additional efficacy outcome measures were IRF-assessed objective response rate (ORR) per RECIST v1.1 and HCC modified RECIST (mRECIST). Efficacy results are summarised in Table 20. Kaplan-Meier curves for OS and PFS are presented in Figures 14 and 15.

**Table 20. Summary of efficacy from IMbrave150**

<b>Key efficacy endpoints</b>	<b>Tecentriq + bevacizumab</b>		<b>Sorafenib</b>	
<b>OS</b>	n = 336		n = 165	
No. of deaths (%)	96 (28.6%)		65 (39.4%)	
Median time to event (months)	NE		13.2	
95% CI	(NE, NE)		(10.4, NE)	
Stratified hazard ratio <sup>1</sup> (95% CI)	0.58 (0.42, 0.79)			
p-value <sup>2</sup>	0.0006 <sup>2</sup>			
<b>IRF-assessed PFS<sup>3</sup></b>	n = 336		n = 165	
No. of events (%)	197 (58.6%)		109 (66.1%)	
Median duration of PFS (months)	6.8		4.3	
95% CI	(5.8, 8.3)		(4.0, 5.6)	
Stratified hazard ratio <sup>1</sup> (95% CI)	0.59 (0.47, 0.76)			
p-value <sup>1</sup>	<0.0001			
	<b>RECIST v1.1</b>		<b>HCC mRECIST</b>	
	Tecentriq + bevacizumab	Sorafenib	Tecentriq + bevacizumab	Sorafenib
<b>IRF-assessed ORR<sup>3,5</sup></b>	n = 336	n = 165	n = 336	n = 165
No. of confirmed responders (%)	93 (27.7%)	19 (11.5%)	112 (33.3%)	21 (12.7%)
95% CI	(23.0, 32.8)	(7.1, 17.4)	(28.3, 38.7)	(8.1, 18.8)
p-value <sup>4</sup>	<0.0001		<0.0001	
No. of complete responses (%)	22 (6.5%)	0	37(11.0%)	3 (1.8%)



Key efficacy endpoints	Tecentriq + bevacizumab		Sorafenib	
No. of partial responses (%)	71 (21.1%)	19 (11.5%)	75 (22.3%)	18 (10.9%)
<b>IRF-assessed DOR<sup>3,5</sup></b>	n = 93	n = 19	n = 112	n = 21
Median in months	NE	6.3	NE	6.3
95% CI	(NE, NE)	(4.7, NE)	(NE, NE)	(4.9, NE)
Range (months)	(1.3 <sup>+</sup> , 13.4 <sup>+</sup> )	(1.4 <sup>+</sup> , 9.1 <sup>+</sup> )	(1.3 <sup>+</sup> , 13.4 <sup>+</sup> )	(1.4 <sup>+</sup> , 9.1 <sup>+</sup> )

<sup>1</sup> Stratified by geographic region (Asia excluding Japan vs. rest of world), macrovascular invasion and/or extrahepatic spread (presence vs. absence), and baseline AFP (< 400 vs. ≥ 400 ng/mL)

<sup>2</sup> Based on stratified log-rank test; as compared to significance level 0.004 (2-sided) based on 161/312=52% information using the OBF method

<sup>3</sup> Per independent radiology review

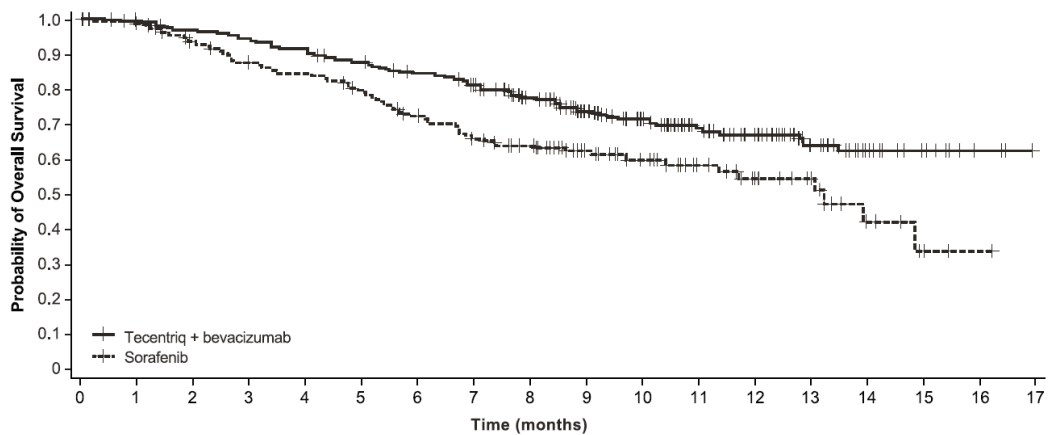
<sup>4</sup> Based on stratified Cochran-Mantel-Haenszel test

<sup>5</sup> Confirmed responses

<sup>+</sup> Denotes a censored value

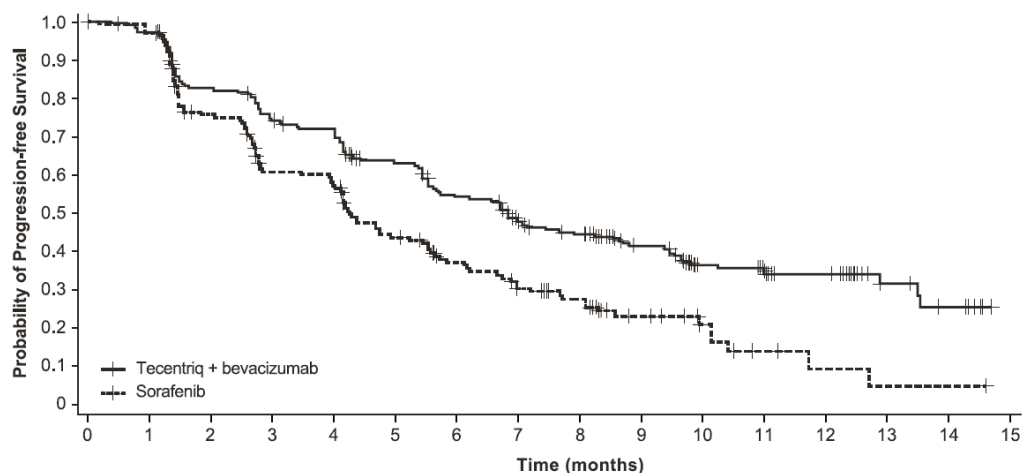
PFS = progression-free survival; RECIST = Response Evaluation Criteria in Solid Tumours v1.1; HCC mRECIST = Modified RECIST Assessment for Hepatocellular Carcinoma; CI = confidence interval; ORR = objective response rate; DOR = duration of response; OS = overall survival; NE = not estimable; N/A = not applicable

**Figure 14. Kaplan-Meier Plot for Overall Survival (IMbrave150)**



No. of Patients at Risk	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Tecentriq + bevacizumab	336	329	320	312	302	288	275	255	222	165	118	87	64	40	20	11	3	NE
Sorafenib	165	157	143	132	127	118	105	94	86	60	45	33	24	16	7	3	1	NE

**Figure 15. Kaplan-Meier Plot for Progression-Free Survival per RECIST v1.1 (IMbrave150)**



No. of Patients at Risk	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Tecentriq + bevacizumab	336	322	270	243	232	201	169	137	120	74	50	46	34	11	7	NE
Sorafenib	165	148	109	84	80	57	44	34	27	15	9	4	2	1	1	NE

The study also evaluated patient-reported outcomes using the EORTC QLQ-C30 and EORTC QLQ-HCC18 questionnaires. Treatment with Tecentriq and bevacizumab delayed clinically meaningful deterioration of patient-reported physical functioning, role functioning, global health status/quality of life and key symptoms (i.e. appetite loss, diarrhoea, fatigue and pain) versus sorafenib.

### Immunogenicity

#### Tecentriq SC

##### *BP40657 (IMscin001)*

Exploratory analyses showed that the subset of patients in the Tecentriq SC arm who were treatment-emergent ADA positive (19%) appeared to have similar efficacy (effect on progression-free survival) as compared to patients who tested negative for treatment-emergent ADA (81%). Median time to progression was 2.8 months (95% CI: 1.4, 4.2) in the treatment-emergent ADA positive patients and 2.9 months (95% CI: 2.7, 4.2) in the treatment-emergent ADA negative patients.

#### Intravenous Tecentriq

##### *GO29436 (IMpower150)*

Exploratory analyses adjusting for imbalances in baseline health and disease characteristics showed that the subset of patients in the four drug regimen arm who were ADA positive by week 4 (32%) appeared to have similar efficacy (effect on overall survival) as compared to patients who tested negative for treatment-emergent ADA by week 4 (68%). The OS hazard ratio comparing the ADA-positive subgroup of the four drug regimen to the three drug regimen (control) was 0.77 (95% CI: 0.57, 1.02). The OS hazard ratio comparing the ADA-negative subgroup to control was 0.73 (95% CI: 0.58, 0.93).

##### *GO28915 (OAK)*

Exploratory analyses adjusting for imbalances in baseline health and disease characteristics showed that the subset of patients who were ADA positive by week 4 (22%) appeared to have similar efficacy (effect on overall survival) as compared to patients who tested negative for treatment-emergent ADA by week 4 (78%). The OS hazard ratio comparing the ADA-positive subgroup of the Tecentriq arm to docetaxel was 0.75 (95% CI: (0.57, 0.98)). The OS hazard ratio comparing the ADA-negative subgroup to docetaxel was 0.69 (95% CI: (0.56, 0.84)).

##### *YO40245 (IMbrave150)*

Exploratory analyses adjusting for imbalances in baseline health and disease characteristics showed that the subset of patients (20%) who were ADA-positive by week 6 appeared to have reduced efficacy (effect on OS) as compared to patients (80%) who tested negative for treatment-emergent ADA by week 6. ADA-positive patients by week 6 appeared to have similar overall survival compared to sorafenib-treated patients. The OS hazard ratio comparing the ADA-positive subgroup of the Tecentriq and bevacizumab arm to sorafenib was 0.95 (95% CI: 0.57, 1.59). The OS hazard ratio comparing the ADA-negative subgroup to sorafenib was 0.41 (95% CI: 0.27, 0.62).

## **5.2 Pharmacokinetic properties**

#### Tecentriq SC

Atezolizumab model-predicted exposure metrics following Tecentriq SC (1875 mg SC administered every 3 weeks) and intravenous atezolizumab (1200 mg IV administered every 3 weeks) administration in the IMscin001 study are shown in Table 21. Atezolizumab Cycle 1 observed serum  $C_{\text{trough}}$  (i.e. pre-dose cycle 2) showed non-inferiority of atezolizumab within Tecentriq SC to intravenous atezolizumab, with a geometric mean ratio (GMR) of 1.05 (90% CI: 0.88–1.24).

The GMR for Cycle 1 model-predicted for AUC from 0 to 21 days ( $AUC_{0-21d}$ ) was 0.87 (90% CI: 0.83–0.92). The maximum systemic accumulation ratio following 1875 mg of Tecentriq SC administered every 3 weeks is 2.2. The model-predicted  $C_{\text{trough}}$  and AUC at steady state were comparable for Tecentriq SC and intravenous atezolizumab (see Table 21).

**Table 21. Atezolizumab steady state exposure (geometric mean with 5th-95th Percentiles) following subcutaneous or intravenous administration of atezolizumab**

Parameter	Atezolizumab within Tecentriq SC	Intravenous Atezolizumab
$C_{\text{trough}}$ at steady state <sup>a</sup> (mcg/mL)	205 (70.3-427)	179 (98.4-313)
AUC at steady state <sup>a</sup> (mcg/mL day)	6163 (2561-11340)	6107 (3890-9334)

a) Model predicted exposure based on population pharmacokinetics analysis

## Absorption

### Tecentriq SC

Based on population PK analysis, the absolute bioavailability was 72% and the first-order absorption rate ( $K_a$ ) is 0.3 (1/day). The atezolizumab geometric mean maximum serum concentration ( $C_{\text{max}}$ ) was 189 mcg/mL and median time to maximum serum concentration ( $T_{\text{max}}$ ) was 4.5 days (median; 2.2-9.0 days min-max).

## Distribution

A population pharmacokinetic analysis indicates that central compartment volume of distribution ( $V_1$ ) is 3.28 L and volume at steady-state ( $V_{\text{ss}}$ ) is 6.91 L in the typical patient.

## Metabolism

The metabolism of atezolizumab has not been directly studied. Antibodies are cleared principally by catabolism.

## Excretion

A population pharmacokinetic analysis indicates that the clearance of atezolizumab is 0.200 L/day and the typical terminal elimination half-life ( $t_{1/2}$ ) is 27 days.

## Pharmacokinetics in Special Populations

### Hepatic impairment

No dedicated studies of atezolizumab have been conducted in patients with hepatic impairment. In the population pharmacokinetic analysis, there were no clinically important differences in the clearance of intravenous or subcutaneously administered atezolizumab between patients with mild hepatic impairment (bilirubin  $\leq$  ULN and AST  $>$  ULN or bilirubin  $>$  1.0 to 1.5 X ULN and any AST) or moderate hepatic impairment (bilirubin  $>$ 1.5 to 3x ULN and any AST). No data are available in patients with severe (bilirubin  $>$ 3.0  $\times$  ULN and any AST) hepatic impairment. Hepatic impairment was defined by the National Cancer Institute (NCI) criteria of

hepatic dysfunction (see section 4.2 *Dose and method of administration*). The effect of moderate or severe hepatic impairment (bilirubin  $> 1.5 \times$  to  $3 \times$  ULN and any AST or bilirubin  $> 3 \times$  ULN and any AST) on the pharmacokinetics of atezolizumab is unknown.

#### Renal impairment

No dedicated studies of atezolizumab have been conducted in patients with renal impairment. In the population pharmacokinetic analysis, no clinically important differences in the clearance of intravenous atezolizumab were found in patients with mild (eGFR 60 to 89 mL/min/1.73 m<sup>2</sup>; n = 208) or moderate (eGFR 30 to 59 mL/min/1.73 m<sup>2</sup>; n = 116) renal impairment compared to patients with normal (eGFR greater than or equal to 90 mL/min/1.73 m<sup>2</sup>; n = 140) renal function. Only a few patients had severe renal impairment (eGFR 15 to 29 mL/min/1.73 m<sup>2</sup>; n = 8) (see section 4.2 *Dose and method of a administration*). The effect of severe renal impairment on the pharmacokinetics of atezolizumab is unknown.

No clinically relevant differences in the clearance of subcutaneous atezolizumab were found in patients with mild (eGFR 60 to 89 mL/min/1.73 m<sup>2</sup>; n=111) or moderate (eGFR 30 to 59 mL/min/1.73 m<sup>2</sup>; n=32) renal impairment compared to patients with normal (eGFR greater than or equal to 90 mL/min/1.73 m<sup>2</sup>;n=103) renal function.

#### Elderly

No dedicated studies of atezolizumab have been conducted in elderly patients. The effect of age on the pharmacokinetics of atezolizumab was assessed in a population pharmacokinetic analysis. Age was not identified as a significant covariate influencing intravenous atezolizumab pharmacokinetics based on patients of age range of 21 - 89 years (n = 472), and median of 62 years of age. No clinically important difference was observed in the pharmacokinetics of atezolizumab among patients  $< 65$  years (n = 274), patients between 65 - 75 years (n = 152) and patients  $> 75$  years (n = 46) (see section 4.2 *Dose and method of administration*).

No clinically relevant difference was observed in the pharmacokinetics of subcutaneous atezolizumab among patients  $< 65$  years (n=138), patients between 65–75 years (n=89), and patents  $> 75$  years of age (n=19).

### **5.3 Preclinical safety data**

#### **Genotoxicity**

No genotoxicity studies have been conducted with atezolizumab.

#### **Carcinogenicity**

No carcinogenicity studies have been conducted with atezolizumab.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Vorhyaluronidase alfa (an enzyme used to increase the dispersion and absorption of co-administered drugs when administered subcutaneously), histidine, acetic acid, methionine, sucrose, polysorbate 20 and water for injections.

## 6.2 Incompatibilities

No incompatibilities have been observed between Tecentriq SC and polyvinyl chloride (PVC), polypropylene (PP), polycarbonate (PC), stainless steel (ss), and polyurethanes (PU).

## 6.3 Shelf life

In Australia, information on the shelf life can be found on the public summary of the Australian Register of Therapeutic Goods (ARTG). The expiry date can be found on the packaging.

From a microbiological point of view, the product should be used immediately once transferred from the vial to the syringe since the medicine does not contain any antimicrobial-preservative.

The closed syringe can be stored at  $\leq 25^{\circ}\text{C}$  for up to 8 hours in diffuse daylight and in the refrigerator ( $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$ ) for up to 72 hours (3 days).

## 6.4 Special precautions for storage

Store the vials at  $2^{\circ}\text{C}$  to  $8^{\circ}\text{C}$ . Do not freeze.

Tecentriq SC vials should be kept in the outer carton in order to protect from light. Do not shake.

This medicine should not be used after the expiry date (EXP) shown on the pack.

## 6.5 Nature and contents of container

Tecentriq SC is available in a single-use glass vial containing 15 mL solution in a pack size of 1 vial.

## 6.6 Special precautions for disposal

The release of medicines into the environment should be minimised. Medicines should not be disposed of via wastewater and disposal through household waste should be avoided. Unused or expired medicine should be returned to a pharmacy for disposal.

## 6.7 Physicochemical properties

### Chemical structure

Atezolizumab is an engineered, humanised, monoclonal antibody that directly binds to PD-L1 and blocks interactions with the PD-1 and B7.1 receptors. Atezolizumab is a non-glycosylated IgG1 immunoglobulin that has a calculated molecular mass of 145 kDa.

### CAS number

1380723-44-3

## 7 MEDICINE SCHEDULE (POISONS STANDARD)

Schedule 4 – Prescription Only Medicine.

## 8 SPONSOR

Roche Products Pty Limited  
ABN 70 000 132 865  
Level 8, 30 – 34 Hickson Road  
Sydney NSW 2000  
AUSTRALIA

Medical enquiries: 1800 233 950

**9 DATE OF FIRST APPROVAL**

29 February 2024

**10 DATE OF REVISION**

25 March 2024

**SUMMARY TABLE OF CHANGES**

<b>Section Changed</b>	<b>Summary of new information</b>
4.8	Addition of musculoskeletal and connective tissue disorders to Table 7