NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

Resource impact report:
Pembrolizumab with carboplatin and paclitaxel for untreated metastatic squamous non-small-cell lung cancer (TA770)

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Summary

NICE has recommended pembrolizumab with carboplatin and paclitaxel for untreated metastatic squamous non-small-cell lung cancer (NSCLC) in line with the recommendation wording in section 1.

We estimate that:

- Around 1,200 people with untreated metastatic squamous NSCLC are eligible for treatment with pembrolizumab with carboplatin and paclitaxel (pembrolizumab combination therapy). This is split: 800 people PD-L1 tumour proportion score (TPS) <50%; 400 people TPS =≥50%.
- Around 550 people with PD-L1 TPS < 50% receive pembrolizumab combination therapy from year 2022/23 onwards based on current people receiving treatment in the Cancer Drugs Fund (CDF). This is 68%. This number is expected to remain constant over 5 years as shown in table 1.
- Around 50 people with PD-L1 TPS ≥ 50% receive pembrolizumab combination therapy from year 2022/23 onwards based on current people receiving treatment in the CDF. This is the proportion of people who need urgent clinical intervention (11%) as shown in table 1.
- Around 8,700 chemotherapy administration appointments per year will be needed, as shown in table 2. This is also consistent with the number of administration appointments during the period this treatment was in the CDF. The cost of these appointments will now be funded within routine commissioning.

Table 1 Estimated number of people in England receiving pembrolizumab combination therapy

	2022/23	2023/24	2024/25	2025/26	2026/27
People eligible TPS<50%	800	800	800	800	800
Market share for pembrolizumab comb. PD-L1 TPS <50% (%)	68	68	68	68	68
Population receiving pembrolizumab comb. each year PD-L1 TPS <50%	550	550	550	550	550
People eligible TPS≥ 50%	400	400	400	400	400
People in need of urgent clinical intervention - pembrolizumab comb. PD-L1 TPS ≥ 50% (%)	11	11	11	11	11
Population receiving pembrolizumab comb. each year PD-L1 TPS ≥ 50%	50	50	50	50	50

Note: All figures are rounded to the nearest 10.

Table 2 Estimated chemotherapy appointments in England

	2022/23	2023/24	2024/25	2025/26	2026/27
First attendance of each cycle	2,200	2,200	2,200	2,200	2,200
Subsequent attendances in each cycle	6,500	6,500	6,500	6,500	6,500
Total appointments	8,700	8,700	8,700	8,700	8,700

Note: The impact on appointments on capacity is already experienced in routine services while pembrolizumab combination therapy has been in the CDF, therefore there are no net additional appointments.

This report is supported by a local resource impact template because the list price of pembrolizumab has a discount that is commercial in confidence. The discounted price of pembrolizumab can be put into the template and other variables may be amended.

This technology is commissioned by NHS England. Providers are NHS hospital trusts.

1 Pembrolizumab with carboplatin and paclitaxel

1.1 NICE has recommended pembrolizumab with carboplatin and paclitaxel as an option for untreated metastatic squamous non-small-cell lung cancer (NSCLC) in adults, only if:

- Their tumours express PD-L1 with less than a 50% tumour proportion score
- their tumours express PD-L1 with a 50% tumour proportion score of 50% or more and they need urgent clinical intervention
- it is stopped at 2 years of uninterrupted treatment or earlier if their disease progresses and
- the company provides pembrolizumab according to the commercial arrangement.

1.2 This appraisal is a review of NICE TA600 which recommended pembrolizumab with carboplatin and paclitaxel (pembrolizumab in combination) for use within the Cancer Drugs Fund as an option for untreated metastatic squamous NSCLC.

1.3 For people with squamous NSCLC whose tumours express PD-L1 with a tumour proportion score less than 50%, the only first-line treatment currently available in routine commissioning is platinum-based combination chemotherapy, if it is tolerated. For people whose tumours express PD-L1 at 50% or more, most clinicians would use pembrolizumab monotherapy (available in routine commissioning) to avoid chemotherapy toxicity. Some people who need urgent clinical intervention may benefit from initial combination therapy with pembrolizumab and chemotherapy (for example, people with impending major airway obstruction).

2 Resource impact of the guidance

2.1 We estimate that:

- Around 1,200 people with untreated metastatic squamous NSCLC are eligible for treatment with pembrolizumab with carboplatin and paclitaxel (pembrolizumab combination therapy). This is split: 800 people PD-L1 tumour proportion score (TPS) <50%; 400 people TPS =≥50%.
- Around 550 people with PD-L1 TPS < 50% receive pembrolizumab combination therapy from year 2022/23 onwards based on current people receiving treatment in the CDF. This is 68%. This number is expected to remain constant over 5 years as shown in table 1.
- Around 50 people with PD-L1 TPS ≥ 50% receive pembrolizumab combination therapy from year 2022/23 onwards based on current people receiving treatment in the CDF. This is the proportion of people who need urgent clinical intervention (11%) as shown in table 1.
- Around 8,700 chemotherapy administration appointments per year will be needed, as shown in table 2. This is also consistent with the number of administration appointments during the period this treatment was in the CDF. The cost of these appointments will now be funded within routine commissioning.

2.2 Current treatment uptake assumptions are based on Blueteq CDF data and clinical expert opinion is that uptake is expected to remain at the same level when funding for pembrolizumab combination therapy moves from the CDF to routine commissioning. This is shown in the resource impact template. Table 3 shows the number of people in England who are estimated to receive pembrolizumab combination therapy by financial year.

Table 3 Estimated number of people in England receiving pembrolizumab combination therapy

	2022/23	2023/24	2024/25	2025/26	2026/27
People eligible TPS<50%	800	800	800	800	800
Market share for pembrolizumab comb. PD-L1 TPS <50% (%)	68	68	68	68	68
Population receiving pembrolizumab comb. each year PD-L1 TPS <50%	550	550	550	550	550
People eligible TPS≥50%	400	400	400	400	400
People in need of urgent clinical intervention - pembrolizumab comb. PD-L1 TPS ≥50% (%)	11	11	11	11	11
Population receiving pembrolizumab comb. each year PD-L1 TPS ≥50%	50	50	50	50	50

Note: All figures are rounded to the nearest 10.

2.3 The number of chemotherapy appointments is shown in table 4 below. These are not additional to the number of appointments already experienced while the treatment has been in the CDF.

Table 4 Estimated chemotherapy appointments in England

	2022/23	2023/24	2024/25	2025/26	2026/27
First attendance of each cycle	2,200	2,200	2,200	2,200	2,200
Subsequent attendances in each cycle	6,500	6,500	6,500	6,500	6,500
Total appointments	8,700	8,700	8,700	8,700	8,700

2.4 This report is supported by a local resource impact template. Pembrolizumab has a commercial arrangement (commercial access agreement). This makes pembrolizumab available to the NHS with a discount. The size of the discount is commercial in confidence. The discounted price of pembrolizumab can be put into the template and other variables may be amended. It is the

company's responsibility to let relevant NHS organisations know details of the discount.

3 Implications for commissioners and providers

3.1 This technology is commissioned by NHS England and Improvement. Providers are NHS hospital trusts.

3.2 Pembrolizumab in combination will now be available through routine commissioning. There is also a continued impact on the capacity of provider chemotherapy units. The technology was previously funded from the Cancer Drugs Fund, but this will stop from 90 days after the publication of the guidance on 09/02/2022.

3.3 Pembrolizumab combination therapy has a longer average treatment duration than the chemotherapy comparator options available in routine commissioning for people whose tumours express PD-L1 with less than a 50% tumour proportion score. The resource impact template allows commissioners to assess the resource impact of any additional attendances required at provider services for reimbursement.

3.4 Pembrolizumab falls within the programme budgeting category 2D: Cancers and Tumours - Lung.

4 How we estimated the resource impact

The population

4.1 Around 39,000 people were diagnosed with lung cancer in 2018 [Office for National Statistics - 2019 data release]. Table 5 shows the details of the population with untreated metastatic squamous NSCLC who are estimated to be eligible for treatment with pembrolizumab combination therapy.

Table 5 Number of people eligible for treatment in England

Population	Proportion of previous row (%)	Number of people
Total population		56,286,961
Adult population		44,263,393
Incidence of lung cancer[1]	0.09	39,000
People who have NSCLC[2]	88.23	34,300
People who have squamous histology [3]	25	8,600
People diagnosed with stage IV metastatic disease[2]	48.2	4,100
People who receive a first line treatment[2]	65.6	2,700
People who have performance status of 0-1[2]	44.9	1,200
Total number of people eligible for treatment with pembrolizumab combination therapy		**1,200**
People whose tumours express PD-L1 with less than a 50% TPS[4]	66.7	800
People estimated to receive pembrolizumab combination therapy each year from year 2022/23 (PD-L1 TPS less than 50%)	68	**550**
People whose tumours express PD-L1 with a 50% TPS of 50% or more and they need urgent clinical intervention[4]	33.3	400
People estimated to receive pembrolizumab combination therapy each year from year 2022/23 (TPS 50% or more)	11	**50**

[1] Office for National Statistics (2019 data release)

[2] NCLA annual report 2018

[3] Mid-point company estimate and Powell et.al 2013 [Powell et.al 2013]

[4] Clinical opinion (consistent with company trial data)

Note: The number of people receiving the technology is rounded to the nearest 10.

Assumptions

4.2 The resource impact template shows the impact on routine commissioning resulting from pembrolizumab combination therapy moving from the CDF into routine commissioning. The capacity impact of pembrolizumab combination therapy has already been experienced while the treatment was in the CDF. It

is assumed that the number of people currently receiving comparator treatments in routine commissioning will not change.

The resource impact template assumes that:

- People receive pembrolizumab combination therapy for 43.5 weeks (average 14.5 cycles of 3 weeks).
- People receive pembrolizumab monotherapy therapy for 48 weeks (average 16 cycles of 3 weeks).
- Whilst people have been treated with pembrolizumab combination therapy in the CDF the impact of a reduction in subsequent treatments has already been realised within routine commissioning. There will be no further impact on subsequent treatment once pembrolizumab combination therapy moves into routine commissioning due to no expected increase in the use of pembrolizumab combination therapy.
- People who are unable to receive further treatment are assumed to receive best supportive care.

Administration costs (National Tariff 2021/22)

- SB12Z Deliver simple parenteral chemotherapy at first attendance £165.
- SB14Z Deliver complex chemotherapy, including prolonged infusional treatment at first Attendance £495

About this resource impact report

This resource impact report accompanies the NICE guidance on: Pembrolizumab with carboplatin and paclitaxel for untreated metastatic squamous non-small-cell lung cancer TA770 and should be read with it.