NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Single Technology Appraisal

Nivolumab with chemotherapy for neoadjuvant treatment of resectable non-small-cell lung cancer [ID3757]

Final scope

Remit/evaluation objective

To appraise the clinical and cost effectiveness of nivolumab with chemotherapy within its marketing authorisation for neoadjuvant treatment of resectable non-small cell lung cancer.

Background

Lung cancer is the third most common cancer and the most common cause of cancer death in the UK, accounting for 13% of all new cancer cases and 21% of all cancer deaths in 2017.[1] There are around 38,900 new lung cancer cases and 27,700 deaths from lung cancer in the England every year. Up to 85% of lung cancers are non-small-cell lung cancers (NSCLC).[2]

Most lung cancers are diagnosed at an advanced stage when the cancer has spread to lymph nodes and other organs in the chest (locally advanced disease; stage III) or to other parts of the body (metastatic disease; stage IV). Less than 30% of lung cancers are diagnosed at an early stage (stage I or II).

NICE guideline Lung cancer: diagnosis and management (NG122) recommends surgery, radiotherapy, chemotherapy or a combination of these for early stage disease.[3] Around 15% of people with NSCLC had surgical resection with curative intent in England in 2020.[4] For people with stage I–II NSCLC that are suitable for surgery, neoadjuvant (before surgical removal of cancerous tumour) treatment is not currently recommended by NICE guideline NG122 outside a clinical trial[3]. Neoadjuvant chemotherapy has shown equivalent outcomes in terms of survival to adjuvant chemotherapy.[5] For stage III NSCLC, surgery is carried out if the surgeon deems the tumour to be excisable. Before surgery, chemoradiotherapy may be given (chemotherapy with radiotherapy) or surgery may potentially be followed by chemotherapy.[3] If surgery is not possible, patients may undergo treatments including chemoradiotherapy which may be followed by immunotherapy. If well enough, people may be offered a cisplatin-based chemotherapy (adjuvant treatment) after surgery.[3] People are actively monitored for cancer recurrence. If the cancer comes back, treatment options and prognosis depend on the site of the recurrence. Despite the curative intent of treatment for early-stage lung cancer, survival is poor, with only about 57% people with stage I, 34% with stage II and 13% with stage III surviving for 5 years after diagnosis.[6] TA761 recommends osimertinib for use within the Cancer Drugs Fund as adjuvant treatment after complete tumour resection in adults with stage IB to IIIA NSCLC whose tumours have epidermal growth factor receptor (EGFR) exon 19 deletions or exon 21 (L858R) substitution mutations.

It is estimated that over half of all NSCLCs express the programmed cell death ligand-1 (PD-L1) biomarker.[7] Cancer cells expressing PD-L1 are believed to suppress certain immune responses and cause increased tumor aggressiveness.

The technology

Nivolumab (Opdivo, Bristol-Myers Squibb). Nivolumab with chemotherapy does not currently have a marketing authorisation in the UK for the neoadjuvant treatment of early stage NSCLC. It has been studied in a clinical trial compared with chemotherapy alone in adults with early stage IB-IIIA resectable NSCLC.

Intervention(s)	Nivolumab with platinum-doublet chemotherapy
Population(s)	Adults with resectable NSCLC
Subgroups	If evidence allows, results by disease stage and level of PD-L1 expression will be considered
Comparators	Established clinical management without nivolumab with chemotherapy, which may include; • Neoadjuvant chemoradiotherapy • Adjuvant chemotherapy • Active monitoring For people whose tumours express PD-L1 with at least a 50% tumour proportion score • Atezolizumab after adjuvant cisplatin-based chemotherapy (subject to NICE appraisal)
Outcomes	The outcome measures to be considered include: • disease-free survival • overall survival • response rates • adverse effects of treatment • health-related quality of life.
Economic analysis	The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year. The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared. Costs will be considered from an NHS and Personal Social Services perspective. The availability of any commercial arrangements for the intervention, comparator and subsequent treatment technologies will be taken into account. The availability of any managed access arrangement for the intervention will be taken into account.

Other considerations	Guidance will only be issued in accordance with the marketing authorisation. Where the wording of the therapeutic indication does not include specific treatment combinations, guidance will be issued only in the context of the evidence that has underpinned the marketing authorisation granted by the regulator.
Related NICE recommendations	**Related Technology Appraisals:** Osimertinib for adjuvant treatment of EGFR mutation-positive non-small-cell lung cancer after complete tumour resection (2022). NICE technology appraisals guidance 761. **Related appraisals in development:** Atezolizumab for adjuvant treatment of resected non-small-cell lung cancer. NICE Technology Appraisals guidance ID3852. Publication expected September 2022. **Related Guidelines:** 'Lung cancer: diagnosis and management' (2019). NICE guideline NG122. **Guidelines in development:** None **Related Interventional Procedures:** None **Related Public Health Guidance/Guidelines:** None **Related Quality Standards:** 'Lung cancer in adults' (2019). NICE quality standard 17
Related National Policy	The NHS Long Term Plan, 2019. NHS Long Term Plan NHS England (2018/2019) NHS manual for prescribed specialist services (2018/2019) Chapter 105: Specialist cancer services (adults).

References

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5. European Society for Medical Oncology (ESMO). Early and locally advanced non-small-cell lung cancer (NSCLC): ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Annals of Oncology. 2017;28(Supplement

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7. Skov, B., Rørvig, S., Jensen, T. et al. (2020) The prevalence of programmed death ligand-1 (PD-L1) expression in non-small cell lung cancer in an unselected, consecutive population. Mod Pathol 33, 109–117