

# NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

## Single Technology Appraisal

### Cabozantinib for previously treated differentiated thyroid cancer unsuitable for or refractory to radioactive iodine [ID4046]

#### Final scope

##### Remit/evaluation objective

To appraise the clinical and cost effectiveness of cabozantinib within its marketing authorisation for treating locally advanced or metastatic differentiated thyroid cancer, in adults whose disease is refractory to, or who are unsuitable for, radioactive iodine and whose disease has progressed during or after prior systemic therapy.

##### Background

Thyroid cancer is a rare type of cancer that affects the thyroid gland, a gland at the base of the neck that produces hormones. Thyroid cancers can be differentiated or undifferentiated. Differentiated thyroid cancer cells retain the appearance of normal thyroid cells and do not spread as quickly as undifferentiated cancer cells. There are 4 main types of thyroid cancer: papillary, follicular, medullary and anaplastic. Papillary and follicular carcinomas are differentiated thyroid cancers and the most common types of thyroid cancer, with similar management and prognosis. There are also several less common variants of differentiated thyroid cancer, including but not limited to Hürthle cell, tall cell, insular, and columnar.

Thyroid cancer is uncommon and accounted for 1.2% of all new cases of cancer in the UK in 2020.<sup>1</sup> There was a 5-year prevalence of 21,306 people with thyroid cancer in the UK in 2020.<sup>1</sup> Differentiated thyroid cancers are the most common types of thyroid cancers, with papillary carcinomas responsible for 80 to 90% of cases.<sup>2,3</sup> Follicular carcinomas account for approximately 10% of cases.<sup>2</sup> Differentiated thyroid cancers are typically curable, 10-year survival is typically around 85%.<sup>4</sup> Survival for thyroid cancer is strongly related to stage of disease. Survival is highest for adults diagnosed when the cancer is localised to the thyroid (Stage 1 to Stage 3), with 1-year age-standardised survival of around 99%. Once the cancer has spread beyond the thyroid (Stage 4) 1-year age-standardised survival for adults diagnosed is 77%.<sup>5</sup>

Thyroid cancer is usually treated by partial or total thyroidectomy. The choice of surgery depends on the type and size of cancer amongst other factors. Surgery may be followed by adjuvant treatments. Primarily, this is radioactive iodine which is used to destroy any residual thyroid tissue and any remaining cancer cells. External beam radiotherapy or palliative chemotherapy can also be used. The British Thyroid Association's 'Guidelines for the management of thyroid cancer' notes that the use of external beam radiotherapy and chemotherapy in palliative care has begun to be superseded by targeted

therapy.<sup>6</sup> In clinical practice, best supportive care or monitoring is offered until the disease starts to progress and symptoms occur, or there is rapid progression that is likely to become symptomatic. For residual or recurrent disease targeted therapy (tyrosine kinase inhibitors) may be used. [NICE technology appraisal 535](#) recommends lenvatinib and sorafenib, which inhibit multiple receptor tyrosine kinases including vascular endothelial growth factor (VEGF) receptors, as options for treating differentiated thyroid cancer after radioactive iodine. [NICE technology appraisal 742](#) recommends selpercatinib for use within the Cancer Drugs Fund as an option for treating advanced RET fusion-positive thyroid cancer. [NICE technology appraisal 630](#) recommends larotrectinib for use within the Cancer Drugs Fund as an option for treating for treating NTRK fusion-positive solid tumours.

### The technology

Cabozantinib (Cabometyx, Ipsen) has a marketing authorisation in the UK for the treatment of adult patients with locally advanced or metastatic differentiated thyroid carcinoma, refractory or not eligible to radioactive iodine who have progressed during or after prior systemic therapy.

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| <b>Intervention</b> | Cabozantinib   |
| <b>Population</b>   | Adults with locally advanced or metastatic differentiated thyroid carcinoma, whose disease is refractory to, or who are unsuitable for radioactive iodine, and whose disease has progressed during or after prior systemic therapy.                                  |
| <b>Comparator</b>   | Best supportive care   |
| <b>Outcomes</b>     | The outcome measures to be considered include: <ul style="list-style-type: none"> <li>• overall survival</li> <li>• progression-free survival</li> <li>• response rate</li> <li>• adverse effects of treatment</li> <li>• health-related quality of life.</li> </ul> |

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| <p><b>Economic analysis</b></p>            | <p>The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year.</p> <p>'If the technology is likely to provide similar or greater health benefits at similar or lower cost than technologies recommended in published NICE technology appraisal guidance for the same indication, a cost comparison may be carried out.'</p> <p>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.</p> <p>Costs will be considered from an NHS and Personal Social Services perspective.</p> <p>The availability of any commercial arrangements for the intervention, comparator and subsequent treatment technologies will be taken into account.</p>   |
| <p><b>Other considerations</b></p>         | <p>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.</p>  |
| <p><b>Related NICE recommendations</b></p> | <p><b>Related Technology Appraisals:</b></p> <p><a href="#">‘Lenvatinib and sorafenib for treating differentiated thyroid cancer after radioactive iodine’</a> (2018). NICE Technology appraisal guidance 535. Review date to be confirmed.</p> <p><a href="#">‘Larotrectinib for treating NTRK fusion-positive solid tumours’</a> (2020) NICE Technology appraisal guidance 630. Review date to be confirmed.</p> <p><a href="#">‘Selpercatinib for treating advanced thyroid cancer with RET alterations’</a> (2022). NICE Technology appraisal guidance 742. Review date to be confirmed.</p> <p><b>Related appraisals in development:</b></p> <p><a href="#">‘Selumetinib for treating differentiated thyroid cancer’</a> NICE technology appraisal guidance [ID1079]. Publication date to be confirmed.</p> <p><a href="#">‘Pralsetinib for thyroid cancer’</a> NICE technology appraisal guidance [ID4018]. Publication date to be confirmed.</p> |

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|                                       | <p><b>Related Guidelines:</b></p> <p><a href="#">‘Thyroid disease: assessment and management’</a> (2019). NICE guideline 145. No current plans to review this guideline.</p> <p><b>Guidelines in development:</b></p> <p><a href="#">‘Thyroid cancer: assessment and management’</a><br/>Publication expected November 2022.</p> <p><b>Related interventional Procedures:</b></p> <p><a href="#">‘Minimally invasive video-assisted thyroidectomy’</a> (2014). NICE interventional procedures guidance 499.</p> <p><a href="#">‘Intraoperative nerve monitoring during thyroid surgery’</a> (2008) NICE interventional procedures guidance 255.</p> |
| <p><b>Related National Policy</b></p> | <p>The NHS Long Term Plan, 2019. <a href="#">NHS Long Term Plan</a><br/>NHS England (2018/2019) <a href="#">NHS manual for prescribed specialist services (2018/2019)</a>, chapters 9, 12, 105, 106</p>   |

## References

1. International Agency for Research on Cancer (2021) [United Kingdom](#). Accessed March 2022.
2. NHS conditions (2019) [Thyroid cancer](#). Accessed March 2022.
3. Cancer Research UK (2021) [Types of thyroid cancer](#). Accessed May 2022.
4. Dal Maso L, Tavilla A, Pacini F et al. (2017) Survival of 86,690 patients with thyroid cancer: A population-based study in 29 European countries from EURO CARE-5. *European Journal of Cancer* 1;77:140-152.
5. Office for National Statistics (2019) [Cancer survival in England - adults diagnosed](#). Accessed March 2022.
6. Perros P, Colley S, Boelaert K et al. (2014) Guidelines for the management of thyroid cancer. *Clinical Endocrinology*: 81;s1.