NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Evaluation

Eflornithine for treating high-risk neuroblastoma with complete or partial response after immunotherapy

Final scope

Remit/evaluation objective

To appraise the clinical and cost effectiveness of eflornithine within its marketing authorisation for treating high-risk neuroblastoma with complete or partial response after immunotherapy.

Background

Neuroblastoma is a solid cancer of embryonic nerve cells called neural crest cells. It commonly occurs in the adrenal glands or in the nerve tissue of the sympathetic nervous system. People may be classified as having high-risk neuroblastoma when they are older than 18 months of age, their condition is metastatic or there is MYCN oncogene amplification and overexpression.[1,2]

The initial symptoms of neuroblastoma are usually vague, such as tiredness, fever and loss of appetite. Specific symptoms depend on the location of the tumour. Because neuroblastoma usually develops in the abdomen, the most common symptom is an abdominal lump and children may also experience constipation or difficulty in passing urine. The tumour may affect the chest or neck region and may cause breathlessness and difficulty in swallowing or a visible lump in the neck.

Neuroblastoma usually affects children under the age of 5 years, with a median age of diagnosis of 17 months.[3] Approximately 100 children are diagnosed with neuroblastoma in the UK each year.[4] Of these, 40% may be considered high-risk.[2] High-risk neuroblastoma is associated with a 5-year survival rate of approximately 50%.[5]

Treatment for high-risk disease is generally divided into 3 phases; induction, consolidation and maintenance. During induction and consolidation phases, people in the high-risk category are initially treated with multi-agent chemotherapy, surgery and radiotherapy, followed by high-dose chemotherapy (which may cause severe or complete depletion of bone marrow cells; also known as myeloablative therapy) and autologous stem cell transplant. Radiotherapy is usually also given after stem cell transplant. Following full treatment, the maintenance phase aims to stop the cancer from coming back. Standard of care in the maintenance phase is to treat for minimal residual disease with dinutuximab beta, an immunotherapy-based regimen, or isotretinoin.

The technology

Eflornithine (as eflornithine hydrochloride, brand name unknown, Norgine) does not currently have a marketing authorisation in the UK for neuroblastoma. It is administered orally. It has been studied in single arm clinical trials in children, young people and adults with high-risk neuroblastoma with a complete or partial response

to immunotherapy or high-risk neuroblastoma with partial or complete response following previous relapse or refractory therapy.

Intervention(s)	Eflornithine
Population(s)	People with high-risk neuroblastoma with complete or partial response after immunotherapy
Comparators	Established clinical management without eflornithine
Outcomes	The outcome measures to be considered include: • overall survival • event-free survival • 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.
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:** Dinutuximab beta for treating neuroblastoma (2018) NICE Technology appraisal guidance 538 **Related technology appraisals in development:** Naxitamab with GM-CSF for treating relapsed or refractory high-risk neuroblastoma. NICE technology appraisal guidance ID3769. Publication date to be confirmed. **Related NICE guidelines:** Improving outcomes in children and young people with cancer (2005). NICE cancer service guideline CSG7

	Suspected cancer: recognition and referral (2015, updated 2023). NICE guideline NG12 **Related quality standards:** Cancer services for children and young people (2014). NICE quality standard 55.
Related National Policy	The NHS Long Term Plan, 2019. NHS Long Term Plan Specialist cancer services for adults, Chapter 105. Specialist cancer services for children and young people, Chapter 106. NHS England (2018/2019) NHS manual for prescribed specialist services (2018/2019) Department of Health and Social Care, NHS Outcomes Framework 2016-2017: Domains 1, 2, and 4. https://www.gov.uk/government/publications/nhs-outcomes-framework-2016-to-2017

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