NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Evaluation

Fosdenopterin for treating molybdenum cofactor deficiency type A

Final scope

Remit/evaluation objective

To appraise the clinical and cost effectiveness of fosdenopterin within its marketing authorisation for treating molybdenum cofactor deficiency type A.

Background

Molybdenum cofactor deficiency (MoCD) type A is a rare genetic disease that can appear shortly after birth characterised by sulphite-induced neurodegeneration that worsens over time. It is caused by defects in a gene called MOCS1. The proteins produced by the MOCS1 gene are involved in the formation of a molecule called molybdenum cofactor, which is essential to the function of several enzymes. Without molybdenum cofactor, an enzyme called sulfite oxidase does not function properly, and toxic levels of sulfite and S-sulfocysteine build up in the body, and in particular a child's developing brain. The build-up of these compounds leads to seizures, severe brain abnormalities, and other features of MoCD type A.

The prevalence of MoCD is estimated to be approximately less than 1 in 100,000 or 200,000 worldwide. In European Union, for MoCD type A only 53 cases have been reported leading to an estimated prevalence of 0.005 per 10,000[1].

There are currently no licensed targeted treatments for MoCD type A. Standard management of people with MoCD type A aims to provide symptomatic relief from clinical manifestations of MoCD type A and provide palliative care. Thiamine and magnesium supplementation is used to treat people with deficiencies. Standard treatment for the prevention of migraine, seizures, developmental delay, spasticity/dystonia, and ectopia lentis. Feeding therapy and a gastrostomy tube are considered in people where there are concerns about aspiration and /or persistent feeding issues.

The technology

Fosdenopterin (Nulibry, Sentynl Therapeutics) does not currently have a marketing authorisation in the UK for treating MoCD type A. It has been studied in clinical trials of people with MoCD type A.

Intervention(s)	Fosdenopterin
Population(s)	People with molybdenum cofactor deficiency type A
Comparators	Established clinical management without fosdenopterin

Outcomes	The outcome measures to be considered include: • overall survival • cognitive function • gross motor function • adverse effects of treatment • body weight and nutritional parameters (including growth and development) • neurological development parameters • ophthalmologic disease • nephrolithiasis • feeding status • frequency of seizures • mortality • health-related quality of life (for patients and carers).
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	**None**
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)

References

1. European medicines agency. Assessment report. 2022. Accessed June 2023.