NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Appraisal

Biotin for treating primary and secondary progressive multiple sclerosis

Final scope

Remit/appraisal objective

To appraise the clinical and cost effectiveness of biotin within its marketing authorisation for treating primary and secondary progressive multiple sclerosis.

Background

Multiple sclerosis is a chronic, disabling neurological disease. It occurs when the body's immune system destroys myelin, a protective sheath around nerve cells in the brain and spinal cord. People with multiple sclerosis experience symptoms such as pain, disturbance to muscle tone including weakness or spasticity, chronic fatigue, unsteady gait, speech problems, incontinence, visual disturbance and cognitive impairment.

It is estimated that about 90,000 people have multiple sclerosis in England[1] many of whom are diagnosed between the ages of 20 and 40 years, although it can affect younger or older people. Roughly 3 times as many women have multiple sclerosis as men. Approximately 80–90% of people present with relapsing-remitting multiple sclerosis,[2–4] which is characterised by flare-ups of symptoms (which may or may not result in disability) followed by periods of remission (when symptoms are mild or disappear altogether). At least half of these people develop secondary progressive multiple sclerosis, in which symptoms gradually worsen (with or without relapses), within 10–15 years.[3,4] Approximately 10% of people are diagnosed with primary progressive multiple sclerosis, with symptoms developing and worsening over time, without ever remitting.[2-4]

The disease-modifying interferon beta-1b is licensed for treating secondary progressive multiple sclerosis with active disease, evidenced by relapses. Beta-interferons are not currently recommended by NICE (Technology appraisal guidance 32, currently under review), but have been made available to the NHS through a clinical commissioning policy. No disease-modifying agents are currently licensed for primary progressive disease in the UK. NICE clinical guideline 186 recommends ways to manage the symptoms of multiple sclerosis, including pharmacological treatments, physiotherapy and exercise programmes, occupational therapy, cognitive behavioural therapy, fatigue management, and speech therapy.

The technology

Biotin (high dose pharmaceutical-grade; MD1003, Medday Pharmaceuticals) is a water-soluble vitamin. In high-dose formulations, it acts as a co-enzyme for carboxylases involved in key steps of energy metabolism and fatty acid synthesis. High doses of biotin may promote myelin repair, and enhance energy production in demyelinated neurons. Biotin is administered orally.

Biotin does not currently have a marketing authorisation in the UK for multiple sclerosis. It has been studied in clinical trials, compared with placebo, in adults with primary or secondary progressive multiple sclerosis.

Intervention(s)	Biotin (high dose pharmaceutical-grade)
Population(s)	Adults with primary or secondary progressive multiple sclerosis
Comparators	• Established clinical management without biotin • Ocrelizumab (subject to ongoing NICE appraisal)
Outcomes	The outcome measures to be considered include: • disability (for example, expanded disability status scale [EDSS] or time to walk 25 feet) • symptoms of multiple sclerosis (such as fatigue, cognition and visual disturbance) • mortality • 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 patient access schemes for the intervention or comparator technologies will be taken into account.

Other considerations	If the evidence allows, subgroups of people with primary or secondary progressive multiple sclerosis, with or without active disease will be considered. 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 and NICE Pathways	**Related technology appraisals:** 'Beta interferon and glatiramer acetate for the treatment of multiple sclerosis' (2002) NICE technology appraisal guidance TA32. Review on-going: publication date to be confirmed. **Appraisals in development:** 'Ocrelizumab for treating primary progressive multiple sclerosis' NICE technology appraisals guidance [ID938]. Publication expected July 2018. 'Multiple sclerosis - interferon beta, glatiramer acetate (review TA32)' NICE technology appraisals guidance [ID809]. Publication date to be confirmed. **Related Guidelines:** 'Multiple sclerosis in adults: management' (2014). NICE guideline 186. Review date to be confirmed. **Related Interventional Procedures:** 'Percutaneous venoplasty for chronic cerebrospinal venous insufficiency for multiple sclerosis' (2012) NICE interventional procedures guidance 420. **Related Quality Standards:** Multiple sclerosis (2016) NICE quality standard QS108. **Related NICE Pathways:** Multiple sclerosis (2014) NICE pathway.
Related National Policy	Department of Health (2016) NHS outcomes framework 2016 to 2017: Domains 1–5. Department of Health (2011) The Risk Sharing Scheme for Disease Modifying Therapies in MS NHS England (2017) Manual for Prescribed Specialised Services 2017/18. Chapter 11. Adult specialist neurosciences services

	NHS England (2014) Disease Modifying Therapies for Patients with multiple sclerosis (MS). Clinical commissioning policy reference D04/P/b.

References

1. Multiple Sclerosis Society (2016) MS in the UK [accessed October 2017].

2. Multiple Sclerosis Society (2016) Types of MS [accessed October 2017].

3. NHS Choices (2016) Multiple sclerosis – overview [accessed October 2017].

4. Patient.info (2015) Multiple sclerosis [accessed October 2017].