NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Evaluation

Vamorolone for treating Duchenne muscular dystrophy [ID4024]

Final scope

Remit

To appraise the clinical and cost effectiveness of vamorolone within its marketing authorisation for treating Duchenne muscular dystrophy.

Background

Muscular dystrophies are a group of genetic disorders which cause muscle weakness and progressive disability. Duchenne muscular dystrophy (DMD) is one of the most common and severe forms. DMD is caused by the presence of mutations on the X-chromosome in the gene for dystrophin, a protein that is important for maintaining normal muscle structure and function. These mutations cause muscle fragility that progressively leads to weakness and loss of walking ability during childhood and adolescence. DMD can either be inherited from a parent or can be the result of a random genetic mutation. Boys only have one X chromosome, so only have one single copy of the dystrophin gene. As a result, they have a much higher probability of developing DMD than girls. A very small number of girls develop DMD.

Initial symptoms of DMD usually present between the ages of 1 and 3 years and children with the disease may have difficulty walking, standing, or climbing stairs. Children with DMD may also have behavioural or learning disabilities. After the age of 12 most children will need to use a wheelchair as their muscles weaken and they lose the ability to walk. During adolescence, breathing muscles can weaken, causing shallow breathing and a less effective cough mechanism, which can lead to chest infections. Weakness of the heart muscle, called cardiomyopathy, occurs in almost all patients by the age 18. The life expectancy of people with DMD depends on how quickly and intensely muscle weakness progresses and on how it affects the patient's ability to breathe. The average lifespan is less than 30 years.

The incidence of DMD ranges from 1 in 3500 to 1 in 5000 male live births.[1] Around 2500 people are affected by DMD in the UK.[2]

NICE Highly Specialised Technology guidance 22 recommends ataluren for treating Duchenne muscular dystrophy resulting from a nonsense mutation in the dystrophin gene in people 2 years and over who can walk. Most other treatment options do not treat the underlying cause of the disease and focus on alleviating symptoms and maintaining muscle strength. Increasing the time a patient is able to walk or delaying the loss of further muscle function are the major aims of many treatment options. Interventions may include the use of steroids (associated with several side effects) and physical aids (such as wheelchairs or leg braces), exercise, physiotherapy, and occasionally orthopaedic surgery. In addition, other supportive treatments such as dietetic advice, prevention and treatment of bone fragility and the management of complications of long-term steroid therapy are required. In the later stages of DMD, treatments to help improve breathing and increase oxygen levels may be needed if lung function becomes impaired.

The technology

Vamorolone (Agamree, Santhera) does not currently have a marketing authorisation in the UK for treating DMD. It has been studied in phase II clinical trials in people with DMD. This includes a phase IIb trial comparing vamorolone with a steroid (prednisone) and placebo, in people aged between 4 and 7 years who were able to complete the time to stand test without assistance.

Intervention(s)	Vamorolone
Population(s)	People with Duchenne muscular dystrophy
Comparators	Established clinical management without vamorolone
Outcomes	The outcome measures to be considered include: • walking ability (ambulation) • muscle function • muscle strength • ability to undertake activities of daily living • bone function • cardiac function • concordance and optimisation of treatment • endocrine function • lung function • time to wheelchair • number of falls • time to scoliosis • upper body function • mortality • adverse effects of treatment • 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. The availability and cost of biosimilar and generic products should 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 highly specialised technologies evaluations:** Ataluren for treating Duchenne muscular dystrophy with a nonsense mutation in the dystrophin gene. (2023) HST22 NICE highly specialised technologies guidance **Related Guidelines:** Suspected neurological conditions: recognition and referral (2019) NICE guideline 127
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. Muscular dystrophy. Duchenne muscular dystrophy (DMD) – Overview. Available from: https://www.musculardystrophyuk.org/conditions/duchenne-muscular-dystrophy-dmd . Accessed: 17th July 2023

2. Duchenne UK. About DMD – DMD in numbers. Available from: https://www.duchenneuk.org/about-duchenne-muscular-dystrophy/ Accessed: 17th July 2023