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Public summary of opinion on orphan designation

Idursulfase for the treatment of mucopolysaccharidosis type II (Hunter's syndrome)

On 6 January 2021, orphan designation EU/3/20/2391 was granted by the European Commission to Shire Pharmaceuticals Ireland Limited, Ireland, for idursulfase for the treatment of mucopolysaccharidosis type II (Hunter's syndrome).

What is mucopolysaccharidosis type II (Hunter's syndrome)?

Mucopolysaccharidosis type II (also known as Hunter's syndrome) is an inherited disease caused by the lack of an enzyme called iduronate-2-sulfatase. This enzyme is needed to break down substances in the body called glycosaminoglycans (GAGs). Since patients with mucopolysaccharidosis type II cannot break these substances down, the GAGs gradually build up in most organs in the body and damage them. This causes a wide range of symptoms, particularly difficulty breathing, difficulty walking, mental disability and behavioural problems. Without treatment, these symptoms become increasingly severe.

Mucopolysaccharidosis type II primarily affects male patients. It is a seriously debilitating and life-threatening disease that leads to mental disability and death during youth.

What is the estimated number of patients affected by the condition?

At the time of designation, mucopolysaccharidosis type II affected approximately 0.04 in 10,000 people in the European Union (EU). This was equivalent to a total of around 2,000 people*, and is below the ceiling for orphan designation, which is 5 people in 10,000. This is based on the information provided by the sponsor and the knowledge of the Committee for Orphan Medicinal Products (COMP).

What treatments are available?

At the time of designation, idursulfase, given by infusion into a vein, was authorised in the EU for the treatment of mucopolysaccharidosis type II. This is an enzyme replacement therapy of the enzyme that patients are lacking. Some patients were treated with haematopoietic stem cell transplantation, a

*For the purpose of the designation, the number of patients affected by the condition is estimated and assessed on the basis of data from the European Union, Iceland, Liechtenstein, Norway and the United Kingdom. This represents a population of 519,200,000 (Eurostat 2020).

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procedure where the patient's bone marrow is replaced by stem cells from a donor; the stem cells develop into healthy blood cells that can produce the missing enzyme.

The sponsor has provided sufficient information to show that the medicine might be of significant benefit for patients with mucopolysaccharidosis II, with early studies suggesting that injection of this medicine into the spine may stabilise cognitive function (the ability to think, learn and remember) in children under the age of 6 years, while there are currently no treatments for cognitive decline.

This assumption will need to be confirmed at the time of marketing authorisation, in order to maintain the orphan status.

How is this medicine expected to work?

Idursulfase is a copy of the human enzyme iduronate-2-sulfatase. It replaces the enzyme that is missing or defective in patients with mucopolysaccharidosis type II (Hunter's syndrome). Supplying the enzyme is expected to help to break down GAGs and stop them building up in body tissue, thereby helping to improve the symptoms of the disease. The medicine is injected into the fluid surrounding the spinal cord (intrathecal use) and is therefore able to reach the brain.

What is the stage of development of this medicine?

The effects of idursulfase have been evaluated in experimental models.

At the time of submission of the application for orphan designation, clinical trials with intrathecal use of idursulfase in patients with mucopolysaccharidosis type II were ongoing.

At the time of submission, idursulfase (given by infusion into a vein) was authorised in the EU as Elaprase for the long-term treatment of patients with mucopolysaccharidosis II. Orphan designation of idursulfase (given by intrathecal injection) had been granted in the United States for the treatment of neurocognitive symptoms associated with Hunter's syndrome.

In accordance with Regulation (EC) No 141/2000, the COMP adopted a positive opinion on 3 December 2020, recommending the granting of this designation.

Opinions on orphan medicinal product designations are based on the following three criteria:

- the seriousness of the condition;
- the existence of alternative methods of diagnosis, prevention or treatment;
- either the rarity of the condition (affecting not more than 5 in 10,000 people in the EU) or insufficient returns on investment.

Designated orphan medicinal products are products that are still under investigation and are considered for orphan designation on the basis of potential activity. An orphan designation is not a marketing authorisation. As a consequence, demonstration of quality, safety and efficacy is necessary before a product can be granted a marketing authorisation.

For more information

Contact details of the current sponsor for this orphan designation can be found on EMA website.

For contact details of patients' organisations whose activities are targeted at rare diseases see:

- Orphanet, a database containing information on rare diseases, which includes a directory of patients' organisations registered in Europe;
- European Organisation for Rare Diseases (EURORDIS), a non-governmental alliance of patient organisations and individuals active in the field of rare diseases.