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Public summary of opinion on orphan designation

Adeno-associated viral vector serotype hu68 containing the human *SMN1* gene for the treatment of spinal muscular atrophy

On 24 August 2018, orphan designation (EU/3/18/2060) was granted by the European Commission to Biogen Idec Limited, United Kingdom, for adeno-associated viral vector serotype hu68 containing the human *SMN1* gene for the treatment of spinal muscular atrophy.

What is spinal muscular atrophy?

Spinal muscular atrophy is an inherited disease usually diagnosed in the first year of life that affects the motor neurons (nerves from the brain and spinal cord that control muscle movements). Patients with the disease lack a protein called 'survival motor neuron' (SMN), which is essential for the normal functioning and survival of motor neurons. Without this protein, the motor neurons deteriorate and eventually die. This causes the muscles to fall into disuse, leading to muscle wasting (atrophy) and weakness.

Spinal muscular atrophy is a long-term debilitating and life-threatening disease because it causes breathing problems and muscle wasting that worsens over time.

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

At the time of designation, spinal muscular atrophy affected less than 0.4 in 10,000 people in the European Union (EU). This was equivalent to a total of fewer than 21,000 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, one medicine, Spinraza, was authorised for the treatment of spinal muscular atrophy. Patients also received supportive treatment to help them and their families cope with the symptoms of the disease. This included chest physiotherapy and physical aids to support muscle function, and ventilators to help with breathing.

[*]Disclaimer: 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 (EU 28), Norway, Iceland and Liechtenstein. This represents a population of 517,400,000 (Eurostat 2018).

30 Churchill Place ● Canary Wharf ● London E14 5EU ● United Kingdom
Telephone +44 (0)20 3660 6000 **Facsimile** +44 (0)20 3660 5555
Send a question via our website www.ema.europa.eu/contact

The sponsor has provided sufficient information to show that the medicine might be of significant benefit for patients with spinal muscular atrophy. Early laboratory data indicated that the medicine may improve survival to a greater extent than the authorised treatment.

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?

The SMN protein is produced by two genes, called *SMN1* and *SMN2*. Most patients with spinal muscular atrophy lack the *SMN1* gene but have the *SMN2* gene, which mostly produces a short SMN protein that does not work as well as a full-length protein.

This medicine is made of a virus that has been modified to contain the *SMN1* gene. When injected into the fluid in the brain and spinal cord, the virus is expected to carry the gene into the nerve cells, enabling them to start producing a full-length SMN protein. This is expected to improve the survival and function of the motor neurons, and so preserve muscle function.

The type of virus used in this medicine ('adeno-associated virus') does not cause disease in humans.

What is the stage of development of this medicine?

The effects of the medicine have been evaluated in experimental models.

At the time of submission of the application for orphan designation, no clinical trials with the medicine in patients with spinal muscular atrophy had been started.

At the time of submission, the medicine was not authorised anywhere in the EU for spinal muscular atrophy or designated as an orphan medicinal product elsewhere for this condition.

In accordance with Regulation (EC) No 141/2000 of 16 December 1999, the COMP adopted a positive opinion on 19 July 2018 recommending the granting of this designation.

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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

Sponsor's contact details:

Contact details of the current sponsor for this orphan designation can be found on EMA website, on the medicine's rare disease designations page.

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.

Translations of the active ingredient and indication in all official EU languages[1], Norwegian and Icelandic

Language	Active ingredient	Indication
English	Adeno-associated viral vector serotype hu68 containing the human *SMN1* gene	Treatment of spinal muscular atrophy
Bulgarian	Аденосвързан вирусен вектор серотип hu68, съдържащ човешки *SMN1* ген	Лечение на спинална мускулна атрофия
Croatian	Adeno-povezani virusni vektor serotipa hu68 koji sadrži ljudski gen *SMN1*	Liječenje spinalne mišićne atrofije
Czech	Sérotyp hu68 adeno asociovaný virový vektor, obsahující lidský gen *SMN1*	Léčba spinální muskulární atrofie
Danish	Adenoassocieret viral vektor serotype hu68 indeholdende det humane *SMN1* gen	Behandling af spinal muskelatrofi
Dutch	Adenogeassocieerde virale vector, serotype hu68, welke het humane gen *SMN1* bevat	Behandeling van spinale spieratrofie
Estonian	Inimese *SMN1* geeni sisaldav adeno-assotsieerunud viirusvektori serotüüp hu68	Spinaalse lihasatroofia ravi
Finnish	Adenoassosioitu virusvektori, serotyyppi hu68, joka sisältää ihmisen *SMN1* geenin	Spinaalisen lihasatrofian hoito
French	Vecteur viral adéno-associé de sérotype hu68 contenant le gène humain *SMN1*	Traitement de l'amyotrophie spinale
German	Adeno-assoziierter viraler Vektor Serotyp hu68, der das humane *SMN1* Gen beinhaltet	Behandlung der spinalen Muskelatrophie
Greek	Αδενο-σχετιζόμενος ιικός φορέας ορότυπου hu68 που περιέχει το ανθρώπινο γονίδιο *SMN1*	Θεραπεία της νωτιαίας μυϊκής ατροφίας
Hungarian	Humán *SMN1* gént tartalmazó hu68-as szerotípusú adeno-asszociált vírus vector	Spinális izomatrophia kezelése
Italian	Vettore virale adeno-associato del serotipo hu68 contenente il gene umano *SMN1*	Trattamento dell'atrofia muscolare spinale
Latvian	Adeno-asociētā vīrālā vektora *hu68* serotips, kas satur cilvēka *SMN1* gēnu	Spinālās muskuļu atrofijas ārstēšana
Lithuanian	Adeno asocijuoto viruso vektoriaus serotipas hu68, turintis žmogaus *SMN1* geną	Spinalinės raumenų atrofijos gydymas
Maltese	Vettur virali tas-serotip hu68 assoċjat mal-adenovirus li fih il-ġene *SMN1* uman	Kura tal-atrofija muskolari tas-sinsla
Polish	Wektor adenowirusowy serotypu hu68 zawierający ludzki gen *SMN1*	Leczenie rdzeniowego zaniku mięśni
Portuguese	Vector viral adeno-associado de serotipo hu68 contendo o gene humano *SMN1*	Tratamento da atrofia muscular espinal
Romanian	Vector viral adeno-asociat de serotip hu68 conţinând gena umană *SMN1*	Tratamentul amiotrofiei spinale
Slovak	Adeno-asociovaný vírusový vektor sérotypu hu68 obsahujúci l'udský gén *SMN1*	Liečba spinálnej svalovej atrofie

[1] At the time of designation

Language	Active ingredient	Indication
Slovenian	Adeno-pridruženi virusni vektor serotipa hu68, ki vsebuje človeški gen *SMN1*	Zdravljenje spinalne mišične atrofije
Spanish	Vector viral adenoasociado del serotipo hu68 que conteniene el gene humano *SMN1*	Tratamiento de la atrofia muscular espinal
Swedish	Adenoassocierad virusvektor serotyp hu68, innehållande den mänskliga genen *SMN1*	Behandling av spinal muskelatrofi
Norwegian	Adenoassosiert virusvektor serotype hu68 som inneholder det humane genet *SMN1*	Behandling av spinal muskelatrofi
Icelandic	Adenótengd veiruferja af sermisgerð hu68 sem inniheldur manna *SMN1* gen	Meðferð við mænuvöðvarýrnunar