Zolgensma°: the drug of extremes

For some years now, the escalating cost of new drugs has increasingly threatened access to health care. In 2019, Zolgensma° (*onasemnogene abeparvovec-xioi*) reached the absurd price of about 2 million euros for a single injection per patient.

A publicly funded discovery overexploited by private stakeholders. At the beginning, it was a great story of hope for children suffering from spinal muscular atrophy, a rare genetic disease which is very disabling and carries a grim prognosis. The defective gene was identified in 1995 by a team from the Necker hospital in Paris (1). A group at Généthon (a French nonprofit research laboratory funded by public donations through a telethon and by grants) then developed gene therapy enabling the defective gene to be modified, and filed a patent in 2007, together with the French National Centre for Scientific Research (CNRS). In 2011, the same team published encouraging results obtained in mice (1,2).

A US start-up company, AveXis, tested this treatment in children and signed a licencing agreement with Généthon. Following encouraging trial results, Novartis bought AveXis in 2018 for 8.7 billion dollars (2).

The single injection will be billed at 1.9 million euros per child in the United States. Novartis downplayed the price by pointing out that it is "*50% of the 10-year cost of chronic SMA treatment*", referring to the exorbitant price of Spinraza° (*nusinersen*), which is authorised for the same disease (3,4). As for Généthon and the CNRS, they are expected to be sharing just "*several tens of millions of euros over time*" (**a**)(1).

Spot the mistake... The story does not stop there. In July 2019, the US Food and Drug Administration (FDA) announced that once Novartis had obtained marketing authorisation (MA), AveXis revealed that there had been data manipulation in a pre-clinical part of the MA application (5). The FDA and Novartis were quick to provide reassurances that this fraud did not call into question the ongoing marketing of Zolgensma° (5). The European Medicines Agency (EMA) then reversed its decision to allow accelerated assessment of the Zolgensma° application (5).

Not the time to be fatalistic. This whole affair speaks volumes about the practices of the stakeholders involved in this outrageously profit-oriented drug development programme. It is yet another example of the unscrupulous cost escalation from which pharmaceutical research suffers. How can we stop the spiralling cost of new drugs, which is so damaging to patients around the world? Effective action can only come from countries that present a united front, from citizen engagement, and from the courage of leaders convinced of the need to preserve access to health care and the collective resources destined for the community. And who are prepared, to that end, to begin by demanding transparency from companies and start-ups as regards the costs of research and production.

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***a-** Généthon and the CNRS have apparently signed a clause according to which the price should not become an obstacle to access to treatment. It remains to be seen if such a clause will be effective (ref 6).*

Selected references from Prescrire's literature search

1- Nau JY "À quel prix le Zolgensma, le médicament le plus cher du monde, sera-t-il vendu en France ?" *Slate* 1 July 2019: 8 pages.
2- Institut de myologie "Martine Barkats et l'AAV9-SMN: de la découverte au traitement" 24 August 2018. www.institut-myologie.org accessed 17 September 2019: 1 page.
3- Novartis "AveXis announces innovative Zolgensma gene therapy access programs for US payers and families" 24 May 2019: 9 pages.
4- Prescrire Editorial Staff "Exorbitant prices" *Prescrire Int* 2018; **27** (199): 283.
5- Haridy R "Pharma giant admits data manipulation in FDA application for multi-million-dollar gene therapy" 9 August 2019. newatlas.com accessed 17 September 2019: 4 pages.
6- Benz S "L'argent du Téléthon va enrichir Novartis" *L'Express* 5 June 2019: 8.

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