

<b>Title</b>	Magnetic growth rods for early onset scoliosis treatment
<b>Agency</b>	Comité d'Évaluation et de Diffusion des Innovations Technologiques (CEDIT) Assistance Publique – Hôpitaux de Paris (AP-HP) Direction de l'organisation médicale et des relations avec les universités 3, Avenue Victoria 75184 PARIS Cedex 04 France <a href="mailto:info.cedit@sap.aphp.fr">info.cedit@sap.aphp.fr</a> , <a href="http://cedit.aphp.fr/">http://cedit.aphp.fr/</a>
<b>Reference</b>	Evaluations de technologies de santé <a href="#">Avis du CEDIT – tige magnétique</a>

### Aim

The CEDIT assessed the interest of magnetic growth rods for the scoliosis treatment in children, in order to inform the decision making process of its adoption at the Paris University Hospital (AP-HP). Scoliosis is a sideways permanent curvature of the spine. The severe form, Early Onset Scoliosis (EOS), could require a surgical treatment like the insertion of growth rods. The new technology available is the magnetically controlled growing rods, object of the present assessment report

### Conclusions and results

**Technical aspects:** the magnetic growth rods are orthopaedic extensible systems for spinal lengthening aiming to brace the spine during growth and minimise the progression of scoliosis. The lengthening is performed by an external remote control, without surgical intervention. Two models exist: PHENIX and MAGEC. Not much information is available on PHENIX. The MAGEC system comprises a simple or double sterile titanium rod, available at diameters of 4.5 mm and 5.5 mm depending on the children weighting. The maximal capacity of lengthening is 48 mm.

**Clinical evidence:** The MAGEC system obtained the CE mark and the FDA authorisation (510 k procedure). It is intended for use in children between 2 and 11 years old. According to data available and particularly a guidance released by NICE on June 2014, the CEDIT estimates that the clinical efficacy of the MAGEC system on scoliosis is possibly not different from that of current growth rods, but that it provides an increased benefit by avoiding repeated surgical procedures (8.6 for classical growth rods versus 1.2 for MAGEC, but with a longer median follow-up in conventional rods). Besides, an improved compliance could be revealed by the increased number of lengthening procedures.

**Economic aspects:** The NICE estimate that, despite an initial increased cost with the MAGEC system, its use is cost saving compared with that of conventional growth rods due to a reduction of later surgical procedures for lengthening. This cost saving, obtained about 3 years after the first insertion, is around £ 12,077 per child at a 6 years' time horizon. A team of Lyon university hospitals estimated the gain to be € 6,135 after 4 years for the national insurance fund (these results could be different from a hospital perspective). In terms of budget impact analysis, the benefit could be

modest due to the target population of this technology, estimated at around 100 children per year in France.

**Organisational aspects:** The surgical treatment of EOS is currently proposed by three teams at AP-HP (Robert Debré, Necker and Trousseau Hospitals), for about 10 patients per year. The complexity of the clinical situation and the variety of the proposed techniques could encourage the four teams to come closer in order to share, preserve and improve the current and the future clinical expertise in this field.

### Recommendations

Taking into account the available data, the CEDIT recommends:

- Give the possibility to AP-HP to adopt and use the MAGEC system for children aged 2 to 11 years old suffering of Early Onset Scoliosis and requiring this kind of treatment.
- Set up or participate in a registry for the initial intervention and the follow-up of children, in order to inform the patients' characteristics and to follow the clinical effectiveness of this health technology.
- Take into consideration the possibility to encourage the teams of AP-HP to come closer in order to share, preserve and improve the current and the future clinical expertise in this field

### Methods

A literature review regarding magnetic growth rods for the scoliosis treatment in children was undertaken. Further CEDIT sought input from expert practitioners in the field.

### Further research/reviews required

Seek with the practitioners involved and the manufacturer to promote a national assessment of this technology, aiming to propose for reimbursement the device and the associated procedure.

### Written by

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