

GUIDANCE STATEMENT

Recommendations on the use of growth hormone devices in children

Background

NICE issued technology appraisal guidance in May 2010 on somatropin human growth hormone (recombinant human growth hormone), for the treatment of growth failure in children (NICE TA 188)¹

PAC recommendations

1. Somatropin is recommended as a treatment option for children with growth failure associated with any of the following conditions:

- Growth hormone deficiency (GHD)
- Turner syndrome (TS)
- Prader-Willi syndrome (PWS)
- Chronic renal insufficiency (CRI)
- Born small for gestational age with subsequent growth failure at four years of age or later (SGA)
- Short stature homeobox-containing gene deficiency (SHOXD).

2. Treatment with somatropin should always be initiated and monitored by a paediatrician with specialist expertise in managing growth hormone disorders in children. The choice of product should be made on an individual basis after informed discussion between the responsible clinician and the patient and/or their carer about the advantages and disadvantages of the products available, taking into consideration therapeutic need and the likelihood of adherence to treatment. If, after that discussion, more than one product is suitable, the least costly product should be chosen.

3. Treatment with somatropin should be discontinued if any of the following apply:

- Growth velocity increases less than 50% from baseline in the first year of treatment.
- Final height is approached and growth velocity is less than 2cm total growth in one year.
- There are insurmountable problems with adherence.
- Final height is attained.
- Treatment should not be discontinued by default.

The decision to stop treatment should be made in consultation with the patient and/or carers either by:

- A paediatrician with specialist expertise in managing growth hormone disorders in children, or
- An adult endocrinologist, if care of the patient has been transferred from paediatric to adult services.

Product choice

There are currently 14 different administration devices available on the UK market, with over 50% variation in acquisition cost of growth hormone, ranging from £13.99 to £23.18 per mg of somatropin (see table 1).

While the NICE appraisal states that there appears to be no differences in the clinical effectiveness of the various somatropin products, patient choice is an important factor in maximizing adherence to therapy.¹ This may be influenced by the choice of delivery system and includes the following factors: convenience, reliability, ease of use, lack of pain during injection, safe and acceptable to patients, number of steps in preparation before, during and after usage.

However, it is also recognized that there is a need for commissioners to ensure rational use of medicines and that the use of a more costly delivery system is justified. NHS England guidance “Everyone Counts: Planning for patients 2014/15 to 2018/19”² states:

“It is absolutely critical that all commissioners can demonstrate a systematic approach to securing value for money, so that our patients can be assured that the best possible quality of care is secured for every pound spent on their behalf.”

NICE TA188 states that if, after that discussion with the patient and/or their carer, more than one product is suitable, the least costly product should be chosen.¹

The East of England Priorities Advisory Committee (PAC) have worked with clinical leads in the East of England to agree a list of recommended products for use in the majority of patients whilst still providing patient choice, and criteria for where the use of more expensive products can be justified. See table 2 for summary list of recommended products.

Group 1 products: Preferred products for use in the majority of patients

These products provide a range of core features, are cost effective, and are the preferred products for use in the majority of patients. The rationale for product selection is outlined below:

- **Omnitrope products** (SurePal, Omnitrope Pen): Currently the least costly products.
- **Genotropin products** (Genotropin pen, GoQuick, Miniquick): These provide a range of devices including a pre-filled pen and a disposable device for travelling.
- **Norditropin SimpleXx**: Does not require fridge storage once in use and therefore is useful for children whose care is split between homes or whose lifestyle makes fridge storage difficult. Device has an auto needle inserter which helps to facilitate self-injection. This product is currently significantly more expensive in primary care and therefore, if chosen, prescribing should be retained in secondary care.
- **Humatrope** (HumatroPen) (for SHOX deficiency)

Group 2 products: Products for use in patients with specific needs

The following products are more costly options but have features that provide significant benefits to a cohort of patients: The rationale for product selection is outlined below:

- **Zomacton VisionX needle free**: Needle free device for use in patients with a confirmed needle phobia.
- **Saizen Easypod 3**: This is a larger device which may benefit patients who may have difficulty in handling the smaller devices. It allows monitoring of compliance and is lockable to prevent dose tampering so may be useful for patients where there are concerns around compliance and safety. The device has a hidden needle and autoinserter making the whole process invisible and which may be necessary to aid compliance in some patients.

Group 3: Not for routine use:

The following products are more costly options and do not offer significant advantages over preferred products in groups 1 & 2. The clinician should offer reasons for choosing group 3 products over products in groups 1 & 2.

- **Nordiflex pre-filled pen**
- **NutropinAq pen**

Funding approval and governance

PAC recommends that clinicians seek funding approval before commencing treatment using the standard proforma (see appendix A), which aims to minimise the administrative burden on clinicians by only asking the necessary information to demonstrate that the patient meets NICE criteria and local recommendations on product choice.

PAC recommends that arrangements for governance on compliance with the NICE TA should be negotiated locally. Where notification of continuation of treatment is required, it is recommended that CCGs use a standard proforma (see appendix B).

Table 1: At-a-glance comparison of the main growth hormone device characteristics³⁻¹²

Brand	Devices	Cartridges for Injection Devices	Prefilled pen	Liquid formulation	Room temperature stable after reconstitution	Auto-injection	Dose preset	Needle guard/cover	Dial back	Home nurse visits	Secondary care contract cost per mg (exc VAT) ¹¹	Primary care list price per mg ¹²	% increase over least costly option (primary care)
Omnitrope®	SurePal™	√	X	√	X	X	√	√	Xa	√	£13.99	£14.75	0
	Omnitrope Pen®	√	X	√	X	X	X	√	Xa	√	£13.99	£14.75	0
Genotropin®	Genotropin® Pen	√	x	X#	X	x	x	√	√	√	£17.39	£17.39	18%
	GoQuick®	X	√	X#	X	X	√	√	√	√	£17.39	£17.39	18%
	MiniQuick®	X	√	X#	√+	X	N/A	√	N/A	√	£17.39	£17.39	18%
Humatrope®	HumatroPen®	√	X	X~	X	X	X	√	√	√	£14.40	£18.00	22%
Zomacton®	Zomajet 2 Vision®	√	X	X~	X	N/A	X	N/A	√	√	£17.43	£19.92	35%
	Zomajet VisionX needle free®	√	X	X~	X	N/A	X	N/A	√	√	£17.43	£19.92	35%
NutropinAq®	NutropinAq® Pen	√	X	√	X	X	X	√	√	√	£17.00	£20.30	38%
Norditropin®	Norditropin® SimpleXx®	√	X*	√	√*	√	X	√	Xa	√	£16.97	£21.27	44%
	NordiFlex®	X	√*	√	√*	√	X	√	√	√	£23.18	£23.18	57%
Saizen®	Easypod®3	√	X	√	X	√	√	√	N/A	√b	£23.18	£23.18	57%
	Cool.click® needle free	√	X	√	X	√	√	√	N/A	√	£23.18	£23.18	57%
	Click.easy®	√	X	X	X	√	X	√	√	√	£23.18	£23.18	57%

Reconstitution within the device (2-chamber cartridge); ~ diluent supplied separately; + can be kept at room temp for ≤6 months before use; * can be kept at room temp for ≤3 weeks after first use; a the dose can still be changed without any wastage of the product if you dial above the correct dose, but reset is required; b data transfer function available allowing healthcare professionals to be able to access notes

Table 2: PAC recommendations

PAC recommendations - TBC

Group	Product
Group 1: Preferred products for use in the majority of patients	<p>The following products provide a range of core features, are the least costly options, and are the preferred products for use in the majority of patients.</p> <ul style="list-style-type: none"> • Genotropin Products (Genotropin pen, GoQuick, Miniquick) • Omnitrope products (SurePal, Omnitrope Pen) • Humatrope (HumatroPen) (for SHOX deficiency) • Norditropin SimpleXx – Prescribing to be retained in secondary care
Group 2: Products for use in patients with specific needs	<p>The following products are more costly options that may be considered for use in patients with specific needs:</p> <p>Zomacton VisionX needle free</p> <ul style="list-style-type: none"> • For patients with confirmed needle phobia <p>Saizen Easypod 3</p> <ul style="list-style-type: none"> • For patients who lack dexterity and have difficulty in handling smaller devices. • For patients where a hidden needle/auto inserter is necessary to achieve compliance. • Where there are compliance issues requiring monitoring of adherence. • Where a lockable device to prevent dose tampering is essential for patient safety.
Group 3: Not for routine use	<p>The following products are more costly options and do not offer significant advantages over preferred products in groups 1 or 2.</p> <ul style="list-style-type: none"> • Nordiflex pre-filled pen • NutropinAq pen

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Document history

PAC approval date	11th January 2016
Version	2.1 Correction to table 1 NutropinAq available as liquid formulation
Consultation process	East of England Paediatricians via Dr. Birgit Van Meijgaarden, Consultant paediatrician Basildon hospital and Dr. Carlo Acerini, Consultant paediatrician, Addenbrookes hospital
QA process	Katie Smith, Regional Medicines Information Director, East Anglia Medicines Information Service, 20th January 2016

References

1. NICE technology appraisal guidance [TA188]. Published date: May 2010. Human growth hormone (somatropin) for the treatment of growth failure in children. <https://www.nice.org.uk/guidance/ta188>
2. NHS England guidance. Everyone Counts: Planning for patients 2014/15 to 2018/19, published December 2013 www.england.nhs.uk
3. Summary of Product Characteristics - Genotropin 5.3mg, 12mg and genotropin MiniQuick. Pfizer Ltd. Last updated November 2014. Available via www.medicines.org.uk
4. Patient Information Leaflet. Genotropin 5.3mg, Genotropin 5.3mg, 12mg and Genotropin MiniQuick. Pfizer Ltd. Last updated November 2014. Available via www.medicines.org.uk
5. Summary of Product Characteristics - Humatrope 6mg, 12mg, or 24mg powder and solvent for solution for injection. Eli Lilly and Company Ltd. Last updated 2/5/14. Available via www.medicines.org.uk
6. Summary of Product Characteristics - Norditropin SimpleXx 5 mg/1.5 mL, 10 mg/1.5 mL, 15 mg/1.5 mL; Norditropin NordiFlex 15 mg/1.5 mL. Novo Nordisk Ltd. Last updated 25/06/15. Available via www.medicines.org.uk
7. Summary of Product Characteristics - NutropinAq 10mg/2mL. Ipsen Ltd. Last updated 08/07/13. Available via www.medicines.org.uk
8. Summary of Product Characteristics - Omnitrope 10 mg/1.5 ml Solution for Injection. Sandoz Ltd. Last updated 09/03/15. Available via www.medicines.org.uk
9. Summary of Product Characteristics - Saizen 5.83 mg/ml and 8 mg/ml solution for injection, 8mg click.easy. Merck Serono. Last updated 08/05/15. Available via www.medicines.org.uk
10. Summary of Product Characteristics - Zomacton 10mg Injection and Zomacton 4mg injection. Ferring Pharmaceuticals Ltd. Last updated 06/12/13. Available via www.medicines.org.uk
11. Commercial Medicines Unit - secondary care contract prices from March 2016. Accessed 03/01/2016 www.cmu.nhs.uk
12. BNF online www.medicinescomplete.com accessed 21/07/15.

Acknowledgements

With thanks to:

- Dr Birgit Van Meijgaarden, Consultant Paediatrician, Basildon hospital
- Dr Carlo Acerini, Consultant Paediatrician, Addenbrookes
- Susan Sparrow (SS), Nurse Specialist endocrinology, Addenbrookes
- Karen Homan, IFR/Commissioning Pharmacist, Bedfordshire Clinical Commissioning Group