Shared Care Guideline for Somatropin use as Replacement in Adults with Growth Hormone Deficiency

Growth Hormone (somatotropin)

Executive Summary/ Critical Information.

Indication	Route & Dose	Key aims of treatment in the long term	Monitoring undertaken by specialist before requesting shared care	Ongoing monitoring to be undertaken by GP	Duration of treatment	Stopping criteria	Follow up (weeks/months)
Growth hormone deficiency as per NICE TA 64 Only recommended if adults with growth hormone (GH) deficiency fulfil all three of the following criteria. • They have severe GH deficiency, defined as a peak GH response of less than 9 mU/litre (3 ng/ml) during an insulin tolerance test or a cross-validated GH	Growth hormone preparations are self-administered as a subcutaneous injection preferably in the evening for best physiological response. The dose should be gradually increased or decreased according to individual patient	Improvement of psychological and physical features of deficiency as shown in various clinical trials (Carroll et al, 1998, Jorgensen, 1989). Growth hormone replacement therapy also improves a range of	Baseline IGF-1 (insulin like growth factor) and HBA1C Will be monitored by endocrinologist before the treatment, then annually thereafter	• Follow the documented prescribing advice once transferred to primary care prescribing (once patient is fully established on replacement) and conduct occasional biochemistry as requested on an individual basis e.g. U's & E's and LFTs every 6 month • Monitoring patients overall	Dependent on efficacy / response	Somatropin treatment should be discontinued if the quality of life has not improved sufficiently by 9 months. This is only to be done by the endocrinology team.	Specialist - New starters – phone led nurse review at 3 then 6 months, clinic review as per pathway (diagnosis dependent) GP – To start prescribing when patient is 9 months to a year into treatment and is stable and compliant i.e. stable biochemistry and an improvement in QoL markers.

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threshold in an equivalent test. • They have a perceived impairment of quality of life (QoL), as demonstrated by a reported score of at least 11 in the disease specific 'Quality of life assessment of growth hormone deficiency in adults' (QoL-AGHDA) questionnaire. • They are already receiving treatment for any other pituitary hormone deficiencies as require	requirements as determined by the IGF-I concentration. In practice, the daily dose range is generally between 0.2mg–0.8mg daily, although it rarely exceeds 0.6mg per day. The median maintenance daily dose was measured at 0.3mg and 0.4mg for men and women respectively.	cardiovascular and bone markers (Rosén & Bengtsson, 1990).		health and wellbeing • Report any adverse events to the consultant/ yellow card scheme where appropriate			Not for growth hormone dose adjustment by the GP. The review of dosage and assessment of clinical response is specialist care only.

Key Safety Notice (for instance: notification if prescribing must be brand specific or BNF cautionary and advisory warnings).

Somatropin is a biological medicine and **must be prescribed by brand name**.
The manufacturer states no clinical studies are available in pregnancy and treatment should be discontinued if pregnancy occurs. Both male and female patients should be counselled about contraception. This will be done by the specialist team and the counselling should be documented in the patient notes.

Other

Initial 9 month supply medicine issued via Hospital pharmacy/Homecare service, then further supply from GP via repeat prescription. 2-3 month repeat prescription recommended for cost effectiveness

1. Background

Growth hormone (GH) deficiency in adults results from decreased production of somatotropin from the anterior pituitary gland. It usually occurs as a consequence of structural pituitary disease, for example a pituitary adenoma, a peri-pituitary lesion, or as a result of treatment (radiotherapy or surgery). The prevalence of adult-onset growth hormone deficiency, however, is poorly documented.

Signs and symptoms of growth hormone deficiency:

1. Psychological
    a. Low energy levels
    b. Lack of well-being
    c. Low mood and depression
    d. Anxiety
2. Physical
    e. Increase in body fat particularly around the abdomen
    f. Loss of muscle mass
    g. Loss of bone density
    h. Raised cholesterol
    i. Impaired cardiac function
    j. Reduced exercise capacity

Benefits of growth hormone replacement therapy
Many adults who lack growth hormone find that many of psychological and physical features of deficiency improve with treatment, as shown in various clinical trials (Carroll et al, 1998, Jorgensen, 1989).
Growth hormone replacement therapy also improves a range of cardiovascular and bone markers (Rosén & Bengtsson, 1990).

2. Drug name, form, and licensed indications (unlicensed/off-label)

Drug Product	NHS tariff in primary care
Genotropin® 5.3mg powder and solvent for injection	£92.15 per vial (BNF December 2020)
Humatrope 6mg powder and solvent for solution for injection	£108.00 per vial (BNF December 2020)
Omnitrope SurePal® solution for injection 5mg/1.5mL	£368.74 for 5 cartridges (BNF December 2020)
Norditropin ®solution for injection 5mg/1.5mL	£115.90 per pre-filled pen (BNF March 2021)

3. Dose and Administration

Growth hormone preparations are self-administered as a subcutaneous injection preferably in the evening for best physiological response. The daily dose range is generally between 0.2mg–0.8mg daily, although it rarely exceeds 0.6mg per day. The site of injection should be rotated to avoid lipoatrophy.

The median maintenance daily dose was measured at 0.3mg and 0.4mg for men and women respectively.

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Doses are carefully titrated according to the individual's presentation and any decision to change dose must be in consultation with the Endocrine Team.

Patients initiated on treatment will be given extensive training on how to self-administer the medicine by the Endocrine CNS

The Endocrine CNS will be the first port of call for patients who experience a lack of clinical benefit form treatment or who experience medicines related side-effect. Patients are given a direct dial contact number upon initiation of treatment.

4. Contraindications/Cautions

Cautions

- Diabetes Mellitus- patients will started at a lower dose and HBA1C /random glucose will be monitored at initiation. SPC recommends insulin dose may require adjustment after somatropin therapy is instituted. Patients with diabetes, glucose intolerance, or additional risk factors for diabetes should be monitored closely during somatropin therapy. This is done by the specialist team during initiation.
- Papilloedema
- Relative deficiencies of other pituitary hormones
- Thyroid function should be monitored throughout treatment

Contraindications

- Active malignancy
- Critically ill patients
- Patients with known hypersensitivity to GH or to any excipients of the product
- For any further information on adverse effects as well as cautions , contra-indications and interactions please refer to the current British National Formulary (www.bnf.org.uk) and Summary of Product Characteristics (SPC) (www.medicines.org.uk)

For complete list of contraindications and cautions, please refer to the SPC: https://www.medicines.org.uk/emc.

PREGNANCY AND BREAST FEEDING

The manufacturer states no clinical studies are available in pregnancy. Therefore it is recommended that the patient should not become pregnant whilst on Somatropin. Both male and female patients should be counselled about contraception and what to do if pregnancy occurs and the counselling should be documented in the patient notes. This should be carried out by the consenting doctor or CNS. Treatment should be discontinued if pregnancy does occur.

5. Drug interactions

For a complete list of drug interactions, please refer to the SPC: https://www.medicines.org.uk/emc.

6. Side effects which require managing

Adverse effects	**Symptoms/signs** (specify what would prompt action)	**Actions** (what action should the GP

		take if identified in primary care)
Mild hypertension	Headache	Endocrine team will hold treatment and ask GP to check bloods pressure to ensure a differential diagnosis is completed. If Somatropin is the cause the Endocrine team will make a decision to either try a reduced dose or stop treatment
Arthralgia / Myalgia	Muscle aches- usually lower limb, or joint pain	Expected side effect almost always short lived and resolves in 4-6 months, no intervention necessary
Fluid retention	Swelling of Hands and feet	Expected side effect almost always short lived and resolves in 4-6 months, no intervention necessary
Nervous System Disorders	Paraesthesia, carpal tunnel syndrome	Paraesthesia usually subsides treatment for carpel tunnel should be initiated

For complete list of side effects, please refer to the SPC: https://www.medicines.org.uk/emc.

7. Monitoring and Responsibilities

A shared care guideline is a document which provides information allowing patients to be managed safely by primary care, secondary care and across the interface. It assumes a partnership and an agreement between a hospital specialist, GP and the patient and also sets out responsibilities for each party. The intention to shared care should be explained to the patient and accepted by them. Patients are under regular follow-up and this provides an opportunity to discuss drug therapy. Intrinsic in the shared care agreement is that the prescribing doctor should be appropriately supported by a system of communication and cooperation in the management of patients. The doctor who prescribes the medicine has the clinical responsibility for the drug and the consequence of its use**.**

Parameter	Monitored By	Frequency
IGF-1	Endocrinologist	Baseline then annually
HBA1C	Endocrinologist	Baseline then annually

a. Hospital specialist:

1. Ensure that the patient/carer is an informed recipient in therapy.
2. Ensure the patient meets the NICE criteria for starting growth hormone replacement therapy.

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3. Ensure that patients understand their treatment regimen and any monitoring or follow up that is required (using advocacy if appropriate). Issue any local patient information leaflets where appropriate.
4. Ensure baseline investigations are normal before commencing treatment. Give the patient a patient held booklet for result monitoring if appropriate.
5. A decision based on the biochemical, physical and psychological presentation of the patient guides starting dose of treatment and chosen device
6. Initiate treatment and prescribe until the GP formally agrees to share care (as a minimum, a 9 month supply will issued from the hospital).
7. Send a letter to the GP requesting shared care for this patient.
8. Monitoring by the Endocrine Team with adjustments in dose according to biochemical criteria and patient response to treatment.
9. Send a letter/results notification to the GP after each clinic attendance ensuring current dose, most recent blood results and frequency of monitoring are stated..
10. Evaluation of any reported adverse effects by GP or patient.
11. Advise GP on review, duration or discontinuation of treatment where necessary. Where urgent action is required following tests the hospital team will telephone the patient and inform GP.
12. Inform GP of patients who do not attend clinic appointments.
13. Counsel the patient on contraception and what to do if pregnancy occurs. Document in the notes.
14. Ensure that backup advice is available at all times.

b. General Practitioner:

1. Reinforce the patient's understanding of the nature, effect and potential side effects of the drug before prescribing it as part of the shared care program and contact the specialist for clarification where appropriate.
2. Monitor patient's overall health and well-being.
3. Report any adverse events to the consultant, where appropriate.
4. Report any adverse events to the CSM, where appropriate.
5. Help in monitoring the progression of disease
6. Prescribe the drug treatment as described.

c. **CCG**

1. To provide feedback to trusts via Trust Medicines Committee.
2. To support GPs to make the decision whether or not to accept clinical responsibility for prescribing.
3. To support trusts in resolving issues that may arise as a result of shared care.

d. Patient or parent/carer:

1. Report any adverse effects to their GP and/or specialist.
2. Ensure they have a clear understanding of their treatment.
3. Report any changes in disease symptoms to GP and/or specialist
4. Alert GP and/or specialist of any changes of circumstance which could affect management of disease e.g. plans for pregnancy
5. Take/ administer the medication as prescribed
6. Undertake any monitoring as requested by the GP and/or specialist

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8. Contact Information

Barts Health NHS Trust	
Admin team – please email back completed SCG to this address to upload to patients CRS records (include a note for admin team to inform the consultant and CRS that it has been returned)	bhnt.endocrine@nhs.net or bartshealthendocrinologyadminteam@nhs.net
CCG Medicines Optimisation Team	Newham: E-mail: newccg.medicinesmanagement@nhs.net Telephone: 0203 688 2654 Tower Hamlets: E-mail: thccg.medicinesoptimisation@nhs.net Telephone: 0203 688 2556 Waltham Forest: E-mail: wfccg.medicinesoptimisation@nhs.net Telephone: 0203 688 2654

9. References

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- British National Formulary accessed December 2020

10. Document Management

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Document ratification and history	
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Appendix 1.

Shared Care Guideline: Prescribing Agreement

Section A: To be completed by the hospital consultant initiating the treatment

GP Practice Details:	**Patient Details:**
Name:	Name:
Tel No:	DOB:
Email (nhs.net):	NHS Number (10 digits):

Consultant Details:
Consultant Name:
Secretary Contact Details:
Tel No:
Email (nhs.net):

Diagnosis:	**Drug Name (to be prescribed by GP):** **Dose:** **Frequency:**

I will review the patient in clinic in weeks / months (*Delete as appropriate)*.

Dear

Your patient started treatment with the above drug for the above diagnosis on (insert date) and in my view; his/her condition is now stable.

The patient has given consent to treatment under a shared care prescribing agreement and has agreed to comply with instructions and follow up requirements.

I am requesting your agreement to sharing the care of this patient from (insert date) in accordance with the attached Shared Care Prescribing Guideline.

This patient was reviewed on (insert date). These are the results relevant for the drug and/or condition, as outlined in the shared care document:

Test	Baseline	Date

Please continue to monitor the patient as outlined in the shared care guidelines. Refer to the attached guidelines for monitoring criteria.

Other relevant information:

Consultant Signature:	Date:

Section B: To be completed by the GP and returned to the hospital consultant as detailed in Section A above [If returned via e-mail, use NHS.net email account ONLY]

Please sign and return your agreement to shared care within 14 days of receiving this request.

☐ Yes, I accept sharing care as per shared care prescribing guideline.

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☐ No, I am not willing to undertake shared care for this patient for the following reason: (Please give reason)		
GP Name:	GP Signature:	Date:

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