Clinical Policy: Human Growth Hormone (Somapacitan, Somatropin)

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Line of Business: Commercial, Medicaid

Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description

The following human growth hormone (hGH) formulations require prior authorization:

- hGH analogs: somapacitan-beco (Sogroya®)
- Recombinant hGH (rhGH) formulations: somatropin (Genotropin®, Humatrope®, Norditropin®, Nutropin AQ® NuSpin®, Omnitrope®, Saizen®, Serostim®, Zomacton®, Zorbtive®)

Drugs	Children								Adults		
	GHD	PWS	TS	NS	SHOX	CKD	SGA	ISS	GHD	HIV	SBS
Sogroya									X		
Genotropin	GF	GF	GF				GF	GF	X		
Humatrope	SS/GF		SS/GF		SS/GF		SS/GF	SS/GF	X		
Norditropin	GF	GF	SS	SS			SS	SS	X		
NutropinAQ NuSpin	GF		GF			GF		GF	X		
Omnitrope	GF	GF	GF				GF	GF	X		
Saizen	GF								X		
Serostim										X	
Zomacton	GF		SS		SS		SS	SS	X		
Zorbtive											X

Abbreviations: CKD: chronic kidney disease, GF: growth failure, GHD: growth hormone deficiency, HIV: human immunodeficiency virus, ISS: idiopathic short stature, NS: Noonan syndrome, PWS: Prader-Willi syndrome, SBS: short bowel syndrome, SGA: small for gestational age, SHOX: short stature homeobox-containing gene, SS: short stature, TS: Turner syndrome

FDA Approved Indication(s)

hGH Analogs:

Sogroya is indicated for:

- Replacement of endogenous GH in adults with GHD

rhGH Formulations:

Genotropin is indicated for treatment of:

- Children with GF due to GHD, PWS, SGA, TS, and ISS.
- Adults with either childhood-onset (CO) or adult-onset (AO) GHD.

Humatrope is indicated for treatment of:

- Children with SS or GF associated with GHD, TS, ISS, SHOX deficiency, and failure to catch up in height after SGA birth.
- Adults with either CO or AO GHD.

Norditropin FlexPro is indicated for the treatment of:

- Children with GF due to GHD, SS associated with NS, SS associated with TS, SS born SGA with no catch-up growth by age 2 to 4 years, ISS, and GF due to PWS.
- Adults with either CO or AO GHD.

Nutropin AQ NuSpin is indicated for the treatment of:

- Children with GF due to GHD, ISS, TS, and CKD up to the time of renal transplantation.
- Adults with either CO or AO GHD.

Omnitrope is indicated for the treatment of:
- Children with GF due to GHD, PWS, SGA, TS, and ISS.
- Adults with either CO or AO GHD.

Saizen is indicated for:
- Children with GF due to GHD.
- Adults with either CO or AO GHD.

Serostim is indicated for the treatment of:
- HIV patients with wasting or cachexia to increase lean body mass and body weight, and improve physical endurance.

Zomacton is indicated for:
- Treatment of pediatric patients who have GF due to inadequate secretion of normal endogenous GH, SS associated with TS, ISS, SS or GF in SHOX deficiency, and SS born SGA with no catch-up growth by 2 years to 4 years.
- Replacement of endogenous GH in adults with GHD.

Zorbtive is indicated for treatment of:
- SBS in adult patients receiving specialized nutritional support.

Policy/Criteria
Provider must submit documentation (such as office chart notes, lab results or other clinical information) supporting that member has met all approval criteria.

Health plan approved formularies should be reviewed for all coverage determinations. Requirements to use preferred alternative agents apply only when such requirements align with the health plan approved formulary.

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It is the policy of health plans affiliated with Envolve Pharmacy Solutions™ that Sogroya and somatropin are **medically necessary** when the following criteria are met:

I. Initial Approval Criteria

A. Growth Hormone Deficiency with Neonatal Hypoglycemia (off-label) (must meet all)**:**

1. Diagnosis of neonatal hypoglycemia due to GHD;
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a pediatric endocrinologist;
4. Age ≤ 1 month;
5. Serum GH concentration ≤ 5 µg/L;
6. Member meets one of the following (a or b):
   a. Imaging shows hypothalamic-pituitary abnormality;
   b. Deficiency of ≥ 1 anterior pituitary hormone other than GH (e.g., ACTH, TSH, LH, FSH, prolactin);
7. The requested product is not prescribed concurrently with Increlex® (mecasermin);
8. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
9. Dose does not exceed 0.30 mg/kg per week.

Approval duration: 12 months

B. Growth Hormone Deficiency with Short Stature/Growth Failure - Children *(open epiphyses)* (must meet all)**:**

1. Diagnosis of GHD;
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a pediatric endocrinologist;
4. Age < 18 years;
5. If age > 10 years, open epiphysis on x-ray;
6. Member meets one of the following (a or b):
   a. Low insulin-like growth factor (IGF)-I serum level;
   b. Low insulin-like growth factor binding protein (IGFBP)-3 serum level;
7. Member meets one of the following (a, b, c, d, or e):
   a. Two GH stimulation tests with peak serum levels ≤ 10 µg/mL (e.g., stimulants: arginine, clonidine, glucagon);
   b. Deficiency of ≥ 3 pituitary hormones (i.e., ACTH, TSH, LH, FSH, prolactin);
   c. Prior surgery or radiotherapy to the hypothalamic-pituitary region;
   d. Imaging shows hypothalamic-pituitary abnormality;
   e. GHD-specific mutation (e.g., POU1F1, PROP1, LHX3, LHX4, HESX1, OTX2, TBX19, SOX2, SOX3, GLI2, GHRHR, GH1);
8. Member meets one of the following (a or b):
   a. SS: height is > 2 SD below the mean for age and sex (SD, height, date, and age in months within the last 90 days are required);
   b. GF: one of the following (i, ii, or iii):
      i. Height deceleration across two growth chart percentiles representing > 1 SD below the mean for age and sex (SD and 2 heights, dates, and ages in months at least 6 months apart within the last year are required);
      ii. Growth velocity > 2 SD below the mean for age and sex over 1 year (SD and 2 heights, dates, and ages in months at least 1 year apart within the last year are required);
      iii. Growth velocity > 1.5 SD below the mean for age and sex sustained over 2 years (SD and 2 heights, dates, and ages in months at least 2 years apart within the last two years are required);
9. The requested product is not prescribed concurrently with Increlex (mecasermin);
10. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
    **PA may be required for preferred somatropin products*
11. Dose does not exceed 0.30 mg/kg per week.

Approval duration: 12 months

C. Genetic Disorders with Short Stature/Growth Failure - Children (must meet all)**:**
1. Diagnosis of PWS, TS, NS, or SHOX deficiency confirmed by a genetic test;
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a pediatric endocrinologist;
4. Age < 18 years;
5. If age > 10 years, open epiphysis on x-ray;
6. Member meets one of the following (a or b):
   a. SS: height is > 2 SD below the mean for age and sex (> 1.5 SD if TS) (SD, height, date, and age in months within the last 90 days are required);
   b. GF: one of the following (i, ii, or iii):
      i. Height deceleration across two growth chart percentiles representing > 1 SD below the mean for age and sex (SD and 2 heights, dates, and ages in months at least 6 months apart within the last year are required);
      ii. Growth velocity > 2 SD below the mean for age and sex over 1 year (SD and 2 heights, dates, and ages in months at least 1 year apart within the last year are required);
      iii. Growth velocity > 1.5 SD below the mean for age and sex sustained over 2 years (SD and 2 heights, dates, and ages in months at least 2 years apart within the last two years are required);
7. The requested product is not prescribed concurrently with Increlex (mecasermin);
8. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
9. Request meets one of the following (a, b, or c):
   a. PWS: Dose does not exceed 0.24 mg/kg per week;
   b. TS, NS: Dose does not exceed 0.5 mg/kg per week;
   c. SHOX deficiency: Dose does not exceed 0.35 mg/kg per week.

Approval duration: 12 months

D. Chronic Kidney Disease with Growth Failure – Children (must meet all)**:**
1. Diagnosis of CKD;
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a pediatric endocrinologist or nephrologist;
4. Age < 18 years;
5. If age > 10 years, open epiphysis on x-ray;
6. Member meets one of the following (a, b, c, or d):
   a. GFR < 60 mL/min per 1.73 m^2 for ≥ 3 months;
   b. Dialysis dependent;
   c. Diagnosis of nephropathic cystinosis;
   d. History of kidney transplant ≥ 1 year ago;
7. Member meets one of the following (a or b):
   a. SS: height is > 2 SD below the mean for age and sex (SD, height, date, and age in months within the last 90 days are required);
   b. GF: one of the following (i, ii, or iii):
      i. Height deceleration across two growth chart percentiles representing > 1 SD below the mean for age and sex (SD and 2 heights, dates, and ages in months at least 6 months apart within the last year are required);
      ii. Growth velocity > 2 SD below the mean for age and sex over 1 year (SD and 2 heights, dates, and ages in months at least 1 year apart within the last year are required);
      iii. Growth velocity > 1.5 SD below the mean for age and sex sustained over 2 years (SD and 2 heights, dates, and ages in months at least 2 years apart within the last two years are required);

8. The requested product is not prescribed concurrently with Increlex (mecasermin);
9. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
10. Dose does not exceed 0.35 mg/kg per week.

Approval duration: 12 months

E. Born Small for Gestational Age with Short Stature/Growth Failure - Children (must meet all)**:**

1. Diagnosis of SGA:
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a pediatric endocrinologist;
4. Age ≥ 2 years and < 18 years;
5. If age > 10 years, open epiphysis on x-ray;
6. Birth weight or length > 2 SD below the mean for gestational age (SD, birth weight or length, and gestational age are required);
7. Current height > 2 SD below the mean for age and sex measured within the last year at ≥ 2 years of age (SD, height, date, and age in months are required);
8. The requested product is not prescribed concurrently with Increlex (mecasermin);
9. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
10. Dose does not exceed 0.48 mg/kg per week.

Approval duration: 12 months

F. Growth Hormone Deficiency – Adults and Transition Patients *(closed epiphyses)* (must meet all):

1. Diagnosis of GHD;
2. Prescribed by or in consultation with an endocrinologist;
3. Age ≥ 18 years OR closed epiphysis on x-ray;
4. Member has NOT received somatropin therapy for ≥ 1 month prior to GH/IGF-I testing as outlined below;
5. Member meets one of the following (a, b, or c):
   a. Two fasting a.m. GH stimulation tests with peak serum levels ≤ 5 µg/mL (accepted stimulants: Macrilen™ [macimorelin] or combination of 2 stimulants such as arginine + glucagon);
   b. Both of the following (i and ii):
      i. One fasting a.m. GH stimulation test with peak serum level ≤ 5 µg/ml (accepted stimulants: Macrilen [macimorelin] or combination of 2 stimulants such as arginine + glucagon);
      ii. One low IGF-I serum level;
   c. One low IGF-I serum level and one of the following (i, ii, or iii):
      i. Imaging shows hypothalamic-pituitary abnormality;
      ii. Deficiency of ≥ 3 pituitary hormones (i.e., ACTH, TSH, LH, FSH, prolactin);
      iii. GHD-specific mutation (e.g., POU1F1, PROP1, LHX3, LHX4, HESX1, OTX2, TBX19, SOX2, SOX3, GLI2, GHRHR, GH1);
6. The requested product is not prescribed concurrently with Increlex (mecasermin);
7. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
8. Dose does not exceed one of the following (a or b):
   a. For Sogroya: 8 mg once weekly;
   b. For somatropin formulations: 0.4 mg/day (may adjust by up to 0.2 mg/day every 4 weeks to maintain normal IGF-1 serum levels; doses > 1.6 mg/day would be uncommon).

Approval duration: 6 months

G. Short Bowel Syndrome (must meet all)**:**
1. Diagnosis of SBS;
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a gastroenterologist;
4. Age ≥ 18 years;
5. Member is dependent upon and receiving intravenous nutrition;
6. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
7. Dose does not exceed 8 mg per day.

Approval duration: up to 4 weeks total

H. HIV-Associated Wasting or Cachexia (must meet all)**:**
1. Diagnosis of HIV;
2. Request is for a somatropin formulation;
3. Prescribed by or in consultation with a physician specializing in HIV management;
4. Age ≥ 18 years;
5. Unintentional weight loss of ≥ 10% in the last 12 months occurring while on antiretroviral therapy;
6. Failure of at least 2 pharmacologic therapies from two separate drug classes *(Appendix B)* unless contraindicated or clinically adverse effects are experienced;
7. If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated;*
   **PA may be required for preferred somatropin products*
8. Dose does not exceed 6 mg per day.

Approval duration: 6 months

I. Other diagnoses/indications
1. Refer to ERX.PA.01 if diagnosis is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized).

II. Continued Therapy

A. All Pediatric Indications *(open epiphyses)* (must meet all)**:**
1. Currently receiving medication via a health plan affiliated with Envolve Pharmacy Solutions or member has previously met initial approval criteria;
2. Age < 18 years OR open epiphysis on x-ray;
3. Member meets one of the following (a or b):
   a. For diagnosis of neonatal hypoglycemia, when member has received somatropin therapy for ≥ 2 years, member's height has increased ≥ 2 cm in the last year as documented by 2 height measurements taken no more than 1 year apart (dates and height measurements required);
   b. For all other pediatric diagnoses, member's height has increased ≥ 2 cm in the last year as documented by 2 height measurements taken no more than 1 year apart (dates and height measurements required);
4. If request is for a dose increase, request meets the one of the following (a, b, c, d, or e):
   a. GHD with or without neonatal hypoglycemia: New dose does not exceed 0.30 mg/kg per week;
   b. PWS: New dose does not exceed 0.24 mg/kg per week;
   c. TS, NS: New dose does not exceed 0.5 mg/kg per week;
   d. SHOX deficiency, CKD: New dose does not exceed 0.35 mg/kg per week;
   e. Born SGA: New dose does not exceed 0.48 mg/kg per week.

Approval duration: 12 months

B. Growth Hormone Deficiency - Adults and Transition Patients *(closed epiphyses)* (must meet all)**:**
1. Currently receiving medication via a health plan affiliated with Envolve Pharmacy Solutions or member has previously met initial approval criteria;
2. Member is responding positively to therapy;
3. For IGF-1 test results and dosing (test conducted within the last 90 days), one of the following (a, b, or c):
   a. Low IGF-1 serum level (i or ii):
      i. For Sogroya: 8 mg once weekly;
      ii. For somatropin formulations: If request is for a dose increase, new dose does not exceed an incremental increase of more than 0.2 mg/day and a total dose of 1.6 mg/day;
   b. Normal IGF-1 serum level: Requested dose is for the same or lower dose;
   c. Elevated IGF-1 serum level: Requested dose has been titrated downward.

Approval duration: 12 months

C. Short Bowel Syndrome - Adults (must meet all)**:**
1. Currently receiving medication via a health plan affiliated with Envolve Pharmacy Solutions or member has previously met initial approval criteria;
2. Member is responding positively to therapy;
3. Member has not received the requested product for ≥ 4 weeks;
4. If request is for a dose increase, new dose does not exceed 8 mg per day.

Approval duration: up to 4 weeks total

D. HIV-Associated Wasting/Cachexia - Adults (must meet all)**:**
1. Currently receiving medication via a health plan affiliated with Envolve Pharmacy Solutions or member has previously met initial approval criteria;
2. Member is responding positively to therapy;
3. Member has not received ≥ 12 months of therapy;
4. If request is for a dose increase, new dose does not exceed 6 mg per day.

Approval duration: up to 12 months total

E. Other diagnoses/indications (must meet 1 or 2)**:**
1. Currently receiving medication via a health plan affiliated with Envolve Pharmacy Solutions and documentation supports positive response to therapy.
   Approval duration: Duration of request or 6 months (whichever is less); or
2. Refer to ERX.PA.01 if diagnosis is NOT specifically listed under section III (Diagnoses/Indications for which coverage is NOT authorized).

III. Diagnoses/Indications for which coverage is NOT authorized:
- **A.** Non-FDA approved indications, which are not addressed in this policy, unless there is sufficient documentation of efficacy and safety according to the off-label use policy – ERX.PA.01 or evidence of coverage documents;
- **B.** Idiopathic short stature (ISS);
- **C.** Constitutional delay of growth and puberty (i.e., constitutional growth delay; the member's growth rate is delayed compared to chronological age but appropriate for bone age as determined by x-ray);
- **D.** Familial (genetic) short stature (i.e., height velocity and bone age, as determined by x-ray, are within the normal range and one or both parents are short);
- **E.** Adult short stature or altered body habitus associated with antiviral therapy (other than HIV-associated wasting or cachexia);
- **F.** Obesity treatment or enhancement of body mass/strength for non-medical reasons (e.g., athletic gains).

IV. Appendices/General Information

Appendix A: Abbreviation/Acronym Key

CKD: chronic kidney disease
FDA: Food and Drug Administration
GFR: glomerular filtration rate
GH: growth hormone
GHD: growth hormone deficiency
HIV: human immunodeficiency virus
IGF-1: insulin-like growth factor-1
IGFBP-3: insulin-like growth factor binding protein-3
ISS: idiopathic short stature
NS: Noonan syndrome
PWS: Prader-Willi syndrome
rhGH: recombinant human growth hormone
SBS: short bowel syndrome
SD: standard deviation
SGA: small for gestational age
SHOX: short stature homeobox-containing gene
TS: Turner syndrome

Appendix B: Therapeutic Alternatives

This table provides a listing of preferred alternative therapy recommended in the approval criteria. The drugs listed here may not be a formulary agent for all relevant lines of business and may require prior authorization.

Drug Name*	Dosing Regimen	Dose Limit/Maximum Dose
Appetite Stimulants		
megestrol (Megace®, Syndros®)	400 - 800 mg PO daily (10 – 20 ml/day)	800 mg/day
dronabinol (Marinol®)	2.5 mg PO BID	20 mg/day
Testosterone Replacement Products		
testosterone enanthate or cypionate (various brands)	50 - 400 mg IM Q2 – 4 wks	400 mg Q 2 wks
Androderm® (testosterone transdermal patch)	2.5 – 7.5 mg patch applied topically QD	7.5 mg/day
testosterone transdermal gel (Androgel®, Testim®)	5 - 10 gm gel (delivers 50 – 100 mg testosterone) applied topically QD	10 gm/day gel (100 mg/day testosterone)
Anabolic Steroids		
oxandrolone (Oxandrin®)	2.5 – 20 mg PO /day	20 mg/day
Nausea/Vomiting Treatments		
chlorpormazine	10 to 25 mg PO q4 to 6 hours prn	2,000 mg/day
perphenazine	8 to 16 mg/day PO in divided doses	64 mg/day
prochlorperazine	5 to 10 mg PO TID or QID	40 mg/day
promethazine	12.5 to 25 mg PO q4 to 6 hours prn	50 mg/dose; 100 mg/day
trimethobenzamide	300 mg PO TID or QID prn	1,200 mg/day

Therapeutic alternatives are listed as Brand name® (generic) when the drug is available by brand name only and generic (Brand name®) when the drug is available by both brand and generic.
**Preferred status may be formulary specific.*

Appendix C: Contraindications/Boxed Warnings

- Somatropin contraindications:
  - Acute critical illness
  - Children with PWS who are severely obese or have severe respiratory impairment (reports of sudden death)
  - Active malignancy
  - Product hypersensitivity
  - Active proliferative or severe non-proliferative diabetic retinopathy
  - Children with closed epiphyses

- Sogroya contraindications:
  - Acute critical illness
  - Active malignancy
  - Hypersensitivity to somapacitan-beco or excipients
  - Active proliferative or severe non-proliferative diabetic retinopathy
- Boxed warning(s): none reported

Appendix D: Short Stature and Growth Failure (Criteria Sets I.B, C, D)

- For SS, the policy follows the World Health Organization (WHO) definition of > 2 SD below the mean for age and sex.[1]
- For GF, the policy follows
  - Haymond et al (2013) and Rogol et al (2014) for height deceleration across two major percentiles representing a change of > 1 SD corrected for age and sex[2,3] and
  - the Growth Hormone Research Society (2000) for height velocity in the absence of SS that would prompt further investigation, namely, a height velocity > 2 SD below the mean over 1 year or > 1.5 SD below the mean sustained over 2 years for age and sex.[4]
- The Centers for Disease Control and Prevention (CDC) recommend WHO growth charts for infants and children age 0 to < 2 years and CDC growth charts for children age 2 years to < 20 years in the U.S.[5]
  - Based on CDC recommended growth chart data, SD approximations of major height percentiles falling below the mean are listed below:
    - 2nd percentile: 2 SD below the mean
    - 5th percentile: 1.5 SD below the mean
    - 15th percentile: 1 SD below the mean
    - 30th percentile: 0.5 SD below the mean
    - 50th percentile: 0 SD mean
  - CDC recommended growth charts, data tables, and related information that may be helpful in assessing length, height and growth are available at the following link: https://www.cdc.gov/growthcharts/index.htm.

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1. WHO Child Growth Standards: Length/Height-for-Age, Weight-for-Age, Weight-for-Length, Weight-for-Height and Body Mass Index-for-Age: Methods and Development. Geneva, Switzerland: World Health Organization; 2006. As cited in CDC. Division of Nutrition, Physical Activity, and Obesity. Growth Chart Training: Using the WHO Growth Charts. Page last reviewed April 15, 2015. Available at https://www.cdc.gov/nccdphp/dnpao/growthcharts/who/using/assessing_growth.htm. Accessed May 1, 2020.
2. Haymond M, Kappelgaard AM, Czernichow P, et al. Early recognition of growth abnormalities permitting early intervention. Acta Pædiatrica ISSN 0803-5253. April 2013. DOI:10.1111/apa.12266.
3. Rogol AD, Hayden GF. Etiologies ad early diagnosis of short stature and growth failure in children and adolescents. J Pediatr. 2014 May;164(5 Suppl):S1-14.e6. doi: 10.1016/j.jpeds.2014.02.027.
4. Consensus guidelines for the diagnosis and treatment of growth hormone (GH) deficiency in childhood and adolescence: summary statement of the GH Research Society. JCEM. 2000; 85(11): 3990-3993.
5. Centers for Disease Control and Prevention, National Center for Health Statistics. CDC growth charts: United States. http://www.cdc.gov/growthcharts/. Accessed April 22, 2020.

V. Dosage and Administration

Drug Name	Indication	Dosing Regimen	Maximum Dose
Pediatric Indications (Subcutaneous administration; weekly doses should be divided)			
Genotropin, Humatrope, Norditropin, Nutropin, Omnitrope, Saizen, Zomacton	GHD	G, O: 0.16 to 0.24 mg/kg/week H, Z: 0.18 to 0.30 mg/kg/week N: 0.17 to 0.24 mg/kg/week Nu: to 0.30 mg/kg/week S: 0.18 mg/kg/week	See dosing regimens
Genotropin, Norditropin, Omnitrope	PWS	G, N, O: 0.24 mg/kg/week	0.24 mg/kg/week
Genotropin, Humatrope, Norditropin, Omnitrope, Zomacton	SGA	G, O: to 0.48 mg/kg/week H, N, Z: to 0.47 mg/kg/week	0.48 mg/kg/week

Drug Name	Indication	Dosing Regimen	Maximum Dose
Genotropin, Humatrope, Norditropin, Nutropin, Omnitrope, Zomacton	TS	G, O: 0.33 mg/kg/week H, Nu, Z: to 0.375 mg/kg/week N: to 0.47 mg/kg/week	See dosing regimens
Genotropin, Humatrope, Norditropin, Nutropin, Omnitrope, Zomacton	ISS	G, O, No: to 0.47 mg/kg/week H, Z: to 0.37 mg/kg/week Nu: to 0.30 mg/kg/week	See dosing regimens
Humatrope, Zomacton	SHOX	H, Z: 0.35 mg/kg/week	0.35 mg/kg/week
Norditropin	NS	0.46 mg/kg/week	0.46 mg/kg/week
Nutropin	CKD	0.35 mg/kg/week	0.35 mg/kg/week
Adult Indications (Subcutaneous administration)			
Genotropin, Humatrope, Norditropin, Nutropin, Omnitrope, Saizen, Zomacton	GHD	0.4 mg/day - may adjust by increments up to 0.2 mg/day every 6 weeks to maintain normal IGF-1 serum levels.* _____ **Dosing regimen from Endocrine Society guidelines (Fleseriu, et al., 2016).* Adult GHD dosing should be substantially lower than that prescribed for children. Adult doses beyond 1.6 mg/day would be uncommon.	See dosing regimen
Serostim	HIV-associated wasting	0.1 mg/kg QOD or QD to 6 mg QD	6 mg/day up to 24 weeks
Sogroya	GHD	1.5 mg once weekly – increase by increments of 0.5-1.5 mg every 2-4 weeks based on clinical response and serum IGF-1 concentrations	8 mg/week
Zorbtive	SBS	0.1 mg/kg QD to 8 mg QD	8 mg/day up to 4 weeks

Abbreviations: G: genotropin, H: humatrope, N: norditropin, Nu: nutropin, O: omnitrope, S: saizen, Z: zomacton

VI. Product Availability

Drug	Availability*
hGH Analogs	
Sogroya	MD pen: 5 mg/1.5 mL, 10 mg/1.5 mL
rhGH Formulations	
Genotropin lyophilized powder	MD dual-chamber syringe: 5 mg, 12 mg
Genotropin Miniquick	SD pen cartridge: 0.2 mg, 0.4 mg, 0.6 mg, 0.8 mg, 1.0 mg, 1.2 mg, 1.4 mg, 1.6 mg. 1.8 mg, and 2.0 mg
Humatrope	MD pen cartridge: 6 mg, 12 mg, 24 mg MD vial: 5mg
Norditropin Flexpro	MD pen: 5 mg/1.5 mL, 10 mg/1.5 mL, 15 mg/1.5 mL, 30 mg/3 mL
Nutropin AQ NuSpin	MD: 5 mg/2 mL, 10 mg/2 mL, 20 mg/2 mL
Omnitrope	MD pen cartridge: 5 mg/1.5 mL, 10 mg/1.5 mL MD vial: 5.8 mg
Saizen	MD pen cartridge: 8.8 mg MD vial: 5 mg, 8.8 mg
Serostim	MD vial: 4 mg SD via 5 mg, 6 mg
Zomacton	MD vial: 5 mg, 10 mg
Zorbtive	MD vial: 8.8 mg

SD: single-dose, MD: multidose

VII. References

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Reviews, Revisions, and Approvals	Date	P&T Approval Date
2Q 2018 annual review: removed requirements regarding contraindications; removed requirements for ruling out alternative of diagnoses; neonatal hypoglycemia: removed brain MRI and random GH measurement requirement; GHD, small for gestational age: removed requirements for open epiphyses, defined central nervous system pathology documented by MRI or CT; Prader-Willi syndrome: removed requirements for closed epiphyses, rGH will be titrated to maintain normal range IGF-1 level for age and sex matched controls, ruling out of contraindications, untreated severe sleep apnea, and active psychosis; CKD: removed requirements for open epiphyses, evidence of growth failure per appendix C, dx of CKD via Structural or functional abnormalities of the kidney for ≥ 3 months, GFR < 60 mL/min per 1.73 m^2 for ≥ 3 months, occurrence of both together of any duration, member does not have a functioning renal allograft; SBS: removed requirements for member's SBS therapeutic plan requires specialized nutritional support; changed approval duration from 3 months to 4 weeks; HIV-related wasting or cachexia: removed requirement for ruling out alternate causes of cachexia, unexplained loss of > 10% body weight from baseline, treatment with therapies other than rhGH have been suboptimal; added requirements for trial of appetite stimulants or anti-nausea tx as well as trial of testosterone and anabolic steroid in males; continued tx: removed documentation of adherence to therapy; removed examples of positive response criteria if not mandatory and objective; for Adult GHD: corrected peak GH level ≤ 5 µg/mL to ≤ 5 µg/L; aligned labs required for diagnosis with 2009 AACE guidelines; for Child/adolescent GHD: corrected peak GH level ≤ 10 µg/L to 10; GH use in children: added requirement for documentation of baseline height for initial approval.	02.20.18	05.18
No significant changes: added 4 newly FDA-approved pediatric indications for Zomacton; no change to usage criteria as they already addressed use of Zomacton for these 4 indications.	09.26.18	
2Q 2019 annual review: added preferred Humatrope trial requirement for wasting and cachexia in HIV patients; added requirement for initial approval for use in children that member's bone age is ≤ 15 years if female or ≤ 17 male if boy, consistent with existing requirement for continued therapy; added HIV-related cachexia to continuation of therapy criteria set for adult GHD/SBS; references reviewed and updated.	02.06.19	05.19
1Q 2020 annual review: pediatric endocrinologist, open epiphyses, diagnostic criteria, auxology, and dosing added to all pediatric indications; post transplantation off-label use added to CKD; closed epiphyses added to adult GHD if younger than 18 years; dosing added to all adult indications; intravenous nutrition requirement add to SBS with gastroenterologist consultation; HIV-associated wasting - specialist added, GH treatment limited	11.19.19	02.20

Reviews, Revisions, and Approvals	Date	P&T Approval Date
to one year per pivotal trial, failed trials edited to require two from two different therapeutic classes (Appendix B); references reviewed and updated.		
Auxology updates: correction for age and sex, GH Research Society GF options, and Appendix D added.	06.02.20	08.20
RT4: added FDA-approved GH analog Sogroya.	09.28.20	
1Q 2021 annual review: no significant changes; references reviewed and updated.	10.22.20	02.21
1Q 2022 annual review: no significant changes; to align with differences in formulary preferred products, modified Norditropin and Humatrope redirection to state: If request is for a non-preferred somatropin product, member must use all formulary preferred somatropin products (e.g., Norditropin), unless clinically significant adverse effects are experienced or all are contraindicated; for adult GHD continuation of therapy added requirement that member is responding positively to therapy; RT4 Sogroya added new 5 mg/1.5 mL formulation; references reviewed and updated.	10.11.21	02.22

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information.

This Clinical Policy is not intended to dictate to providers how to practice medicine, nor does it constitute a contract or guarantee regarding payment or results. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members.