BlueCross BlueShield Arizona

An Independent Licensee of the Blue Cross Blue Shield Association

PHARMACY COVERAGE GUIDELINE

GROWTH HORMONE THERAPY:
GENOTROPIN® (somatropin) subcutaneous injection
HUMATROPE® (somatropin) subcutaneous injection
NGENLA® (somatrogon-ghla) subcutaneous injection
NORDITROPIN® (somatropin) subcutaneous injection
NUTROPIN AQ® (somatropin) subcutaneous injection
OMNITROPE® (somatropin) subcutaneous injection
SAIZEN® (somatropin) subcutaneous injection
SEROSTIM® (somatropin) subcutaneous injection
SKYTROFA™ (lonapegsomatropin-tcgd) subcutaneous injection
SOGROYA® (somapacitan-beco) subcutaneous injection
ZOMACTON® (somatropin) subcutaneous injection

This Pharmacy Coverage Guideline (PCG):
- Provides information about the reasons, basis, and information sources we use for coverage decisions
- Is not an opinion that a drug (collectively "Service") is clinically appropriate or inappropriate for a patient
- Is not a substitute for a provider's judgment (Provider and patient are responsible for all decisions about appropriateness of care)
- Is subject to all provisions e.g. (benefit coverage, limits, and exclusions) in the member's benefit plan; and
- Is subject to change as new information becomes available.

Scope
- This PCG applies to Commercial and/or Marketplace plans
- This PCG does not apply to the Federal Employee Program, Medicare Advantage, Medicaid or members of out-of-state Blue Cross and/or Blue Shield Plans

Instructions & Guidance
- To determine whether a member is eligible for the Service, read the entire PCG.
- This PCG is used for FDA approved indications including, but not limited to, a diagnosis and/or treatment with dosing, frequency, and duration.
- Use of a drug outside the FDA approved guidelines, refer to the appropriate Off-Label Use policy.
- The "Criteria" section outlines the factors and information we use to decide if the Service is medically necessary as defined in the Member's benefit plan.
- The "Description" section describes the Service.
- The "Definition" section defines certain words, terms or items within the policy and may include tables and charts.
- The "Resources" section lists the information and materials we considered in developing this PCG
- **We do not accept patient use of samples as evidence of an initial course of treatment, justification for continuation of therapy, or evidence of adequate trial and failure.**
- Information about medications that require prior authorization is available at www.azblue.com/pharmacy. You must fully complete the request form and provide chart notes, lab workup and any other supporting documentation. The prescribing provider must sign the form. Fax the form to BCBSAZ Pharmacy Management at (602) 864-3126 or email it to Pharmacyprecert@azblue.com.

Section A. Applies for all indications and uses:

PHARMACY COVERAGE GUIDELINE

GROWTH HORMONE THERAPY

Criteria for Initial Therapy:

Prescriber Qualifications
- Prescribed by Endocrinologist, Nephrologist, Infectious Disease, or Trauma/Burn Surgery specialist depending upon indication or use

Indication
- Must meet indication specific criteria described below
  - See section B – Growth Hormone Deficiency under 18 years of age
  - See section C – Growth Hormone Deficiency 18 years of age and older
  - See section D – Burns
  - See section E – HIV/AIDS Wasting Syndrome
  - See section F – Small for Gestational Age
  - See section G – Idiopathic Short Stature

Age Requirement
- Age consistent with FDA approved product labeling

Baseline Clinical Evaluation
- Confirm diagnosis per indication specific requirements (e.g., GH stimulation tests, IGF1 levels, bone age, height velocity, imaging)

Alternative Therapies
- Failure, (trial for at least three months duration), contraindication, intolerance to **ALL** the following:
  - Genotropin
  - Norditropin
  - Omnitrope

Safety
- No FDA labeled contraindications
- No concomitant use of multiple growth hormone products or Increlex (mecasermin)

Documentation Requirements
- A completed request form must be submitted including:
  - Chart notes
  - Lab results (GH stimulation tests, IGF1, IGFBP3, bone age)
  - Supporting clinical documentation

Criteria for Continuation of Therapy (renewal therapy):
Note: Manufacturer assistance (e.g., coupons, samples, etc.) are not considered for continuation of therapy.

PHARMACY COVERAGE GUIDELINE

GROWTH HORMONE THERAPY

Prescriber Qualifications
- Continues to be seen by Endocrinologist, Nephrologist, Infectious Disease, or Trauma/Burn Surgery specialist depending upon indication or use

Indication
- Must meet indication specific criteria listed below

Adherence
- Adherence to prescribed therapy regimen documented

Safety
- No new contraindications or significant adverse effects
- No concomitant use of multiple growth hormone products or Increlex (mecasermin)

Additional Requirements
- Meets other continuation criteria per indication or use as described below
  - See section B – Growth Hormone Deficiency under 18 years of age
  - See section C – Growth Hormone Deficiency 18 years of age and older
  - See section D – Burns
  - See section E – HIV/AIDS Wasting Syndrome
  - See section F – Small for Gestational Age
  - See section G – Idiopathic Short Stature

Section B. Growth Hormone Deficiency for Individuals *Under* 18 Years of Age:

Criteria for Initial Therapy:

Indication
- **Growth hormone deficiency (GHD)** for individuals under 18 years of age

Baseline Clinical Evaluation
- **Suspected growth hormone deficiency (GHD)** with **ALL** the following:
  - **ONE** of the following:
    1. No evidence of other pituitary deficiency (**Note:** documentation requires two subnormal growth hormone stimulation tests for diagnosis)
    2. One subnormal growth hormone stimulation test **AND** has IGF1 levels below normal for age and gender matched individual below
    3. Hypothalamic pituitary defect (such as a major congenital malformation, tumor, surgery, irradiation, or trauma) **AND** has a deficiency in at least **one** additional pituitary hormone
  - Marked short stature (greater than 2.5 SD below mean)
  - Growth failure (height velocity less than 25th percentile for age)
  - Moderate to severe reduced IGF1 (e.g., SD less than -2) with delayed bone age
- **Proven growth hormone deficiency** with **ALL** of the following:

  - **ONE** of the following:
    1. Pituitary lesion or GHD secondary to treatment, congenital anomaly, CNS pathology, or multiple hormone deficiencies
    2. **ONE** provocative GH stimulation tests with a peak serum GH value of less than 5 ng per mL after GH stimulation (**Note: This is not needed in an** infant or young child with congenital and severe GHD with extreme short stature (e.g., height less than -3 SD), significantly reduced IGF1 (e.g., less than -2 SD) and IGFBP3, and delayed bone age)
  - Bone age less than chronological age (14 years female, 16 years male)
  - Subnormal IGF1 for age
  - Growth/height velocity 2 SD below mean
- **Congenital hypopituitarism in newborn** with **ALL** the following:
  - **ONE** of the following:
    1. Additional pituitary hormone deficiency or
    2. Imaging confirming pituitary defect
  - Hypoglycemia with GH less than 5 ng per mL
- **Growth failure/short stature** with **ALL** of the following:
  - **ONE** of the following:
    1. Noonan Syndrome
    2. SHOX deficiency
    3. Turner Syndrome
  - Open epiphyses (in past 12 months)
  - Height is 2 SD below mean for chronological age and gender
  - Abnormal growth velocity for at least 6 months
- **Chronic kidney disease (CKD)** with **ALL** the following:
  - Growth failure/short stature height velocity Z score less than -1.88 or height velocity for age less than 3rd percentile persisting beyond 3 months)
  - Stage 3 to 5 CKD, dialysis, or transplant
  - Open epiphyses (in past 12 months)
- **Prader Willi Syndrome** with **NONE** of the following:
  - Severe obesity
  - Uncontrolled diabetes
  - Airway obstruction
  - Severe respiratory impairment

Additional Requirements

- Individual meets **other initial criteria** as described in Section A above

Documentation Requirements

- A completed request form must be submitted including:
  - Chart notes
  - Lab results

- Supporting clinical documentation

Initial Therapy Criteria Approval Duration
- 12 months OR end of plan year

Criteria for Continuation of Therapy (renewal therapy):
Note: Manufacturer assistance (e.g., coupons, samples, etc.) are not considered for continuation of therapy.

Clinical Response
- For proven GHD, Noonan syndrome, Prader Willi syndrome, short stature in CKD, SHOX deficiency, or Turner's syndrome:
  - Height has increased at least 2 to 5 cm/year over the previous year (previous height and date test was done and current height and date test was done must be sent)
  - Has not reached expected adult height (expected height goal must be sent)
  - Recent (within the last 12 months) radiographic evidence epiphyses have not closed

Additional Requirements
- Individual meets **other initial criteria** as described in Section A above

Documentation Requirements
- Chart notes
- Supporting clinical documentation
- Lab values confirming safe continued use

Continuation Therapy Criteria Approval Duration
- 12 months OR end of plan year

Section C. Growth Hormone Deficiency for Individuals 18 Years of Age and Older

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Criteria for Initial Therapy:

Indication
- **Growth hormone deficiency (GHD)** for individuals 18 years of age and older

Age Requirement
- 18 years or older

Baseline Clinical Evaluation
- **Suspected adult onset GHD** where GHD is a result of an **unknown etiology** **and** individual has **BOTH** of the following:
  - Serum insulin like growth factor 1 (IGF1) less than the lower limit of normal for the assay that was used

  - Subnormal response to **two** growth hormone stimulation tests
- **Suspected adult onset GHD** where GHD is the result of a **defined etiology** such as destructive hypothalamic or pituitary disease, radiation therapy, surgery or trauma **and** individual has **BOTH** of the following:
  - Serum insulin like growth factor 1 (IGF1) less than the lower limit of normal for the assay that was used
  - Subnormal response to **one** growth hormone stimulation tests
- **Proven childhood onset GHD** (acquired or idiopathic) and received growth hormone during childhood who is transitioning to adulthood there is documentation of **ALL** of the following:
  - GHD is **ONE** of the following:
    1. GHD was caused by genetic defect, structural cause, organic cause (surgery, radiation, tumor, or multiple (3 or more) pituitary hormone deficiency), no further growth hormone stimulation retesting needed
    2. GHD was **NOT** due to genetic defect, structural cause, organic cause (surgery, radiation, tumor, or multiple (3 or more) pituitary hormone deficiency), **and** individual has subnormal response to **one** growth hormone stimulation tests to determine if ongoing replacement therapy is needed
  - Serum insulin like growth factor 1 (IGF1) is below -2 standard deviations from the mean, which was done while **off growth hormone for 1 month**
- **Congenital/genetic growth hormone deficiency** such as Noonan syndrome, Prader Willi Syndrome, short stature homeobox containing gene (SHOX) deficiency, or Turner's syndrome **and** whose epiphyses have **NOT** closed, no growth hormone stimulation testing required
- Individual with ***multiple (3 or more) pituitary hormone deficiencies other than growth hormone*** (i.e., TSH, ACTH, LH, FSH, AVP), no growth hormone stimulation testing needed

Additional Requirements
- Individual meets **other initial criteria** as described in Section A above

Documentation Requirements
- A completed request form must be submitted including:
  - Chart notes
  - Lab results
  - Supporting clinical documentation

Initial Therapy Criteria Approval Duration
- 12 months OR end of plan year

Criteria for Continuation of Therapy (renewal therapy):
Note: Manufacturer assistance (e.g., coupons, samples, etc.) are not considered for continuation of therapy.

Clinical Response
- Condition has responded while on therapy with response defined as **ONE** of the following:
  - Proven childhood onset GHD (acquired or idiopathic or received growth hormone in childhood) or suspected adult onset GHD and historical documentation in the clinical record of **two** abnormal provocative stimulation tests

- Individual with surgery, irradiation or trauma involving the hypothalamus or pituitary gland or other diseases of the pituitary or hypothalamus and has historical clinical records of **one** abnormal provocative stimulation test
- Individual with multiple pituitary hormone deficiencies other than growth hormone (i.e., TSH, ACTH, LH and/or FSH, AVP) **and** serum insulin like growth factor 1 (IGF1) level is within but not higher than the age and gender specific range of normal to avoid over replacement
- Individual with congenital/genetic growth hormone deficiency such as Noonan syndrome, Prader Willi Syndrome, short stature homeobox containing gene (SHOX) deficiency, or Turner's syndrome

Additional Requirements

- Individual meets **other initial criteria** as described in Section A above
- Clinical records document that without ongoing treatment with growth hormone (GH), signs or symptoms of GH deficiency would reappear, or if a gap in treatment occurred, low GH levels or signs and symptoms of GH deficiency reappeared

Documentation Requirements

- Chart notes
- Supporting clinical documentation
- Lab values confirming safe continued use

Continuation Therapy Criteria Approval Duration

- 12 months OR end of plan year

Section D. Burns:

Criteria for Initial Therapy:

Indication

- Individual with extensive third degree burns showing difficulty with wound healing
- To prevent growth delay in a child with severe burns that cover at least 40 percent of total body surface area

Additional Requirements

- Individual meets **other initial criteria** as described in Section A above

Documentation Requirements

- A completed request form must be submitted including:
  - Chart notes
  - Lab results
  - Supporting clinical documentation

Initial Therapy Criteria Approval Duration

- Up to 1 year post burn OR end of plan year

Section E. HIV/AIDS Wasting (Serostim only):

Criteria for Initial Therapy:

Indication

- **HIV/AIDS Wasting** and **ONE** of the following:
  - Unintentional/involuntary weight loss of at least 10 percent of ideal (standard) body weight for height and weight within the last 12 months. (See women's/men's weight at different ages charts in Definitions section)
  - Unintentional/involuntary weight loss to a body mass index (BMI) of less than 20 kilograms per meter squared

Baseline Clinical Evaluation

- Individual meets **other initial criteria** as described in Section A above
- Weight loss is **not** explained by another concurrent illness other than HIV/AIDS infection
- Has continued weight loss despite adequate nutrition and other measures
- Is currently receiving optimal antiretroviral drug therapy for HIV/AIDS
- Agent will not be used as intermittent therapy for maintenance

Alternative Therapies

- Failure (trial for at least three months duration), contraindication, intolerance, or is not a candidate for megestrol or dronabinol

Documentation Requirements

- A completed request form must be submitted including:
  - Chart notes
  - Lab results
  - Supporting clinical documentation

Initial Therapy Criteria Approval Duration

- 12 weeks

Criteria for Continuation of Therapy (renewal therapy):

Note: Manufacturer assistance (e.g., coupons, samples, etc.) are not considered for continuation of therapy.

Clinical Response

- Weight loss has improved, or weight has stabilized during the initial 12 weeks but target body mass index or target weight has not been achieved and needs continued therapy

Additional Requirements

- Individual meets **other initial criteria** as described in Section A above
- Currently receiving optimal antiretroviral drug therapy for HIV/AIDS
- Agent will not be used as intermittent therapy for maintenance

Documentation Requirements
- Chart notes
- Supporting clinical documentation
- Lab values confirming safe continued use

Continuation Therapy Criteria Approval Duration
- Total course 48 weeks (includes initial approval) OR end of plan year

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Section F. Small for Gestational Age (SGA):

Criteria for Initial Therapy:

Indication
- Small for Gestional Age (SGA)

Baseline Clinical Evaluation
- Weight and/or length *at birth* that is/was 2 standard deviations or more below the mean for gestational age and gender (See WHO Growth Charts Definitions section)
- At age 2 years has not manifested catch up growth documented by a current height remaining at 2 standard deviations or more below the mean for age and gender
- For over the age of 12 years there is recent (within the last 12 months) radiographic evidence that the epiphyses are still open
- Has documentation of goal for expected height

Additional Requirements
- Individual meets **other initial criteria** as described in Section A above

Documentation Requirements
- A completed request form must be submitted including:
  - Chart notes
  - Lab results
  - Supporting clinical documentation

Initial Therapy Criteria Approval Duration
- 12 months OR end of plan year

Criteria for Continuation of Therapy (renewal therapy):
Note: Manufacturer assistance (e.g., coupons, samples, etc.) are not considered for continuation of therapy.

Clinical Response
- **BOTH** of the following:

- Height has increased at least 2 cm/year over the previous year (date previous height was reached and date current height was reached must be sent)
- Individual has not reached expected adult height (expected height goal must be sent)

Additional Requirements

- Individual meets **other initial criteria** as described in Section A above
- For over the age of 12 years there is recent (within the last 12 months) radiographic evidence that the epiphyses are still open

Documentation Requirements

- Chart notes
- Supporting clinical documentation
- Lab values confirming safe continued use

Continuation Therapy Criteria Approval Duration

- 12 months OR end of plan year

Section G. Idiopathic Short Stature (ISS):

- **Growth Hormone injection therapy for treatment of *idiopathic short stature***, without documentation of growth hormone deficiency or underlying pathology is a ***benefit plan exclusion*** and ***not eligible for coverage***.

Criteria for Off Label Use Requests:

Criteria for a request for non-FDA use or indication, treatment with dosing, frequency, or duration outside the FDA approved dosing, frequency, and duration, refer to one of the following Pharmacy Coverage Guideline:

1. Off Label Use of Non Cancer Medications

2. Off Label Use of Cancer Medications

Description:

Somatropin is a synthetically produced growth hormone (GH). Somatropin is indicated for the treatment of growth hormone deficiency (GHD), short stature associated with Turner syndrome (TS) or Noonan syndrome (NS), short-stature homeobox (SHOX) gene deficiency, growth failure due to Prader Willi syndrome (PWS), short stature in children born small for gestational age (SGA), growth failure in children with chronic renal insufficiency (CRI) or chronic kidney disease (CKD) up to the time of transplant, idiopathic short stature (ISS), to promote wound healing in burns, short bowel syndrome (SBS) in patients receiving specialized nutritional support, and HIV-associated wasting. Somatropin is also indicated for replacement of endogenous growth hormone in adults with confirmed GHD. Short stature, such as in idiopathic short stature (ISS) and in small for gestational age (SGA), in

the absence of defined pathology is not a sickness or injury; growth hormone is not a covered health service for these indications.

Growth Hormone Deficiency (GHD) is defined as the inadequate secretion of endogenous growth hormone. GHD may be idiopathic or organic and can occur in childhood or adulthood. Pathophysiology differs between the two onsets. GHD is diagnosed through a combination of clinical and biochemical examination, testing and analysis.

Children with GHD generally present with short stature and growth velocity that is two (2) standard deviations below the mean for chronologic age, sex and pubertal stage. Often the etiology is isolated idiopathic GHD.

GHD in adults often results from conditions affecting the hypothalamus or pituitary gland including surgery and radiation therapy. Adults frequently report symptoms such as unintentional weight gain or difficulty losing weight, low energy, reduced physical performance, decreased libido, impaired psychological well-being and a feeling that things are not right. Physical findings may include increased fat mass, decreased lean body and muscle mass, decreased bone density as well as reduced muscle strength and exercise capacity. There is however no single symptom or sign that is pathognomonic for GHD in adults. In addition, some adults with GHD may be entirely asymptomatic.

Growth Hormone (GH) provocative stimulation test is one of the procedures that may be performed to diagnose growth hormone deficiency (GHD). A provocative agent is used to stimulate the pituitary gland to secrete GH. The intent is to determine the maximum peak GH response from the provocative agent. The peak is the value used to determine whether the response is considered normal or abnormal for the purpose of supporting the diagnosis of GHD. Serum levels may be measured by radioimmunoassay (RIA) or immunoradiometric assay (IRMA).

GH secretion is pulsatile. There are approximately 10 pulses of GH secretion per day, lasting approximately 90 minutes and separated by roughly 128 minutes. Nearly 50% of samples collected during the day in normal subjects have undetectable serum GH concentrations. In addition, GH is undetectable in over 95% of samples in obese or older subjects.

Baseline testing is performed prior to administration of the provocative agent and frequent blood sampling is done thereafter. Sampling occurs approximately 30, 60, 90, 120 and 180 minutes after provocative agent administration. Sampling defines the “curve” of the response (going from a lower GH value prior to provocation to the highest, or peak, GH value after provocation and then a drop from peak) and must provide sufficient information to determine a peak value.

Definitions:

U.S. Food and Drug Administration (FDA) MedWatch Forms for FDA Safety Reporting
MedWatch Forms for FDA Safety Reporting | FDA

Adult: Age 18 years and older

Growth hormone and growth hormone analogs:
- Human growth hormone (hGH):
  - Somatropin products:
    - Genotropin – preferred product
    - Humatrope
    - Ngenla (somatrogon-ghla)
    - Norditropin – preferred product

Nutropin AQ
Omnitrope – preferred product
Saizen
Serostim
Skytrofa (lonapegsomatropin tcgd) pegylated prodrug of hGH
Sogroya (Somapacitan beco)
Zomacton

Contraindications to use of hGH and hGH analogs include:
- Active malignancy
- Active proliferative or severe non-proliferative diabetic retinopathy
- Acute critical illness in response to open heart surgery, abdominal surgery, multiple accidental trauma, or acute respiratory failure
- Growth promotion in pediatric individuals with closed epiphysis
- Pediatric individuals with Prader Willi syndrome who are severely obese or have history of upper airway obstruction or sleep apnea or have severe respiratory impairment by determined by sleep study
- Known hypersensitivity to the drug or any diluent (benzyl alcohol, m cresol) or any other ingredient of the formulation

Growth Hormone (GH) Provocative Stimulation Tests:
- Arginine HCL Test
- Arginine/L-Dopa Test
- Clonidine Test
- Glucagon Stimulation Test
- Growth Hormone Releasing Hormone Test (GHRH)
- Insulin Tolerance Test (ITT) or Insulin Induced Hypoglycemic Test
- L-Dopa Test
- Propranolol / Glucagons Test
- Physiological: sleep-induced or exercise-induced stimulation
- Macimorelin: a ghrelin agonist

Insulin like Growth Factor 1 (IGF1):
A hormone created mainly by the liver that mediates most of the effects of growth hormone. IGF1 blood tests may be used in the diagnosis of growth hormone deficiency.

AGE	SUBNORMAL RESULT
7 years [1]	Less than 52 ng/mL
8 through 10 years	Less than 75 ng/mL
11 through 12 years	Less than 127 ng/mL
13 through 17 years	Less than 212 ng/mL

[1] Limited safety and efficacy data are available below the age of 7.

Insulin like Growth Factor Binding Protein (IGFBP3):
The transport protein for IGF1 and IGF-2 in the circulation. It modulates IGF activity and inhibits cell growth. Its levels increase in the presence of IGF-I, insulin and other growth-stimulating factors such as growth hormone. IGFBP3 blood tests may be used in the diagnosis of growth hormone deficiency.

AGE	SUBNORMAL RESULT	AGE	SUBNORMAL RESULT
7 years [1]	Less than 1.4 mg/L	13 years	Less than 3.1 mg/L
8 years	Less than 1.6 mg/L	14 years	Less than 3.1 mg/L
9 years	Less than 1.8 mg/L	15 years	Less than 3.5 mg/L
10 years	Less than 2.1 mg/L	16 years	Less than 3.4 mg/L
11 years	Less than 2.4 mg/L	17 years	Less than 3.2 mg/L

12 years	Less than 2.7 mg/L		

[1] Limited safety and efficacy data are available below the age of 7.

Functional Impairment:
A state in which the normal or proper action (function) of any body part or organ is damaged or deficient because of growth hormone deficiency.

Burn evaluation:
Extent of total body surface area expressed as a percent

- Rule of 9s for adult:
  - Head 9%
  - Each arm 9%
  - Anterior chest and abdomen 18%
  - Posterior chest and back 18%
  - Each leg 18%
  - Perineum 1%
- Rule of 9s for child:
  - Head 18%
  - Each leg 13.5%
  - Then the rest as above

Depth of burn, estimates the depth of burn affecting the outer epidermis and dermis:

- First degree: superficial, only involves the epidermis
- Second degree: partial thickness, extends through the epidermis and into the dermis
- Third degree: full thickness, extends through the epidermis, into the dermis and into the subcutaneous fat
- Fourth degree: damage the underlying bones, muscles, and tendons

Idiopathic Short Stature (ISS):
ISS (also known as non-growth hormone-deficient short stature) is extreme short stature that does not have a diagnostic explanation after a growth evaluation documenting normal physical function and normal lab tests. ISS includes short stature without documentation of growth hormone deficiency and children are identified as being abnormally short. ISS may also be referred to as short stature of undefined cause.

Small for gestational age (SGA):
A term used to describe a baby who is smaller than the usual amount for the number of weeks of pregnancy. SGA is commonly defined as a weight below the 10th percentile for the gestational age.

Abnormally Short:
Boys: Height predicted to be shorter than 5 feet 3 inches
Girls: Height predicted to be shorter than 4 feet 11 inches

Z-height score:
A conversion of height/length that represents the number of standard deviations (SD) from the mean height for age and gender. A child with a height Z Score <-1.88 has short stature.

Growth or height velocity:
Growth or height velocity, the change in growth over time, a more sensitive index of growth than a single measurement. Current height/length measures are compared with previous growth points to determine the interval growth/height velocity.

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WHO Growth Charts and Calculators:

Weight-for-length/height

https://reference.medscape.com/guide/medical-calculators

Body weight for height charts for women and men:

WEIGHT FOR WOMEN AT DIFFERENT AGES									
	Age 18 to 29			Age 30 to 44			Age 45 to 65		
Height	25%		40%	25%		40%	25%		40%
	UW	SW	OW	UW	SW	OW	UW	SW	OW
4'11"	85	113	158	89	119	167	95	126	176
5'0"	86	114	160	92	122	171	97	129	181
5'1"	87	116	162	93	124	174	99	132	185
5'2"	89	118	165	95	127	178	101	135	189
5'3"	92	122	171	98	131	183	104	139	195
5'4"	94	125	175	101	134	188	107	143	200
5'5"	96	128	179	104	139	195	111	148	207
5'6"	99	132	185	107	143	200	114	152	213
5'7"	101	135	189	110	147	206	116	155	217
5'8"	105	140	196	113	151	211	119	159	223
5'9"	108	144	202	116	155	217	123	164	230
5'10"	110	147	206	119	159	223	126	168	235
5'11"	112	149	209	122	163	228	129	172	241
6'0"	113	151	211	125	167	234	132	176	246
6'1"	115	153	214	127	169	237	135	180	252
6'2"	116	155	217	128	171	239	138	184	258

Legend: UW: underweight SW: standard weight OW: overweight

WEIGHT FOR MEN AT DIFFERENT AGES									
	Age 18 to 29			Age 30 to 44			Age 45 to 65		
Height	25%		40%	25%		40%	25%		40%
	UW	SW	OW	UW	SW	OW	UW	SW	OW
5'0"	94	125	175	98	131	183	101	134	188
5'1"	95	126	176	99	132	185	102	136	190
5'2"	96	128	179	100	133	186	104	138	193
5'3"	98	131	183	102	136	190	106	141	197
5'4"	101	135	189	105	140	196	109	145	203
5'5"	104	138	193	107	143	200	112	149	209
5'6"	107	142	199	110	147	206	115	153	214
5'7"	110	147	206	114	152	213	119	158	221
5'8"	113	151	211	118	157	220	122	163	228
5'9"	116	155	217	122	162	227	126	168	235
5'10"	119	159	223	125	167	234	130	173	242
5'11"	123	164	230	130	173	242	134	178	249
6'0"	128	170	238	134	179	251	137	183	256
6'1"	133	177	248	139	185	259	142	189	264
6'2"	138	184	258	145	193	270	146	194	272
6'3"	143	190	266	149	198	277	150	200	280
6'4"	147	196	274	152	203	284	155	206	288
6'5"	151	201	281	155	207	290	158	211	295
6'6"	155	206	288	158	211	295	162	216	302
6'7"	157	209	293	161	215	301	166	221	309

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6'8"	161	214	300	164	219	307	170	226	316

Legend: UW: underweight SW: standard weight OW: overweight

Summary of FDA-approved indications: Growth hormone and Growth hormone analogs											
	Genotropin	**Humatrope**	**Ngenla**	**Norditropin**	**Nutropin AQ**	**Omnitrope**	**Saizen**	**Serostim**	**Skytrofa**	**Sogroya**	**Zomacton †**
Condition											
Adult GHD [a]	✓	✓		✓	✓	✓	✓			✓	✓
Pediatric GHD [b]	✓	✓	✓	✓	✓	✓	✓		✓		✓
Growth failure with CKD [c]					✓						
Idiopathic short stature (ISS) [d]	✓	✓		✓	✓	✓					✓
Noonan syndrome (NS)				✓							
Prader Willi syndrome (PWS)	✓			✓		✓					
Short bowel syndrome (SBS)											
SHOX deficiency [e]		✓									✓
Turner syndrome (TS)	✓	✓		✓	✓	✓					✓
Small for gestational age (SGA)	✓ [g]	✓ [h]		✓ [h]		✓ [g]					✓
Wasting or cachexia in adults with HIV [f]								✓			

[a] Adult Growth hormone deficiency **(GHD) may be either**: (1) ***adult-onset*** (patients who have GHD, either alone or associated with multiple hormone deficiencies [hypopituitarism], as a result of pituitary disease, hypothalamic disease, surgery, radiation, or trauma) or (2) ***childhood-onset*** (patients who were GHD during childhood as a result of congenital, genetic, acquired, or idiopathic causes). *Patients who were treated with somatropin for GHD in childhood and whose epiphyses are closed should be reevaluated before continuation of somatropin* therapy at the reduced dose level recommended for GHD adults. According to current standards, confirmation of the diagnosis of adult growth hormone deficiency in **both** of the above **groups** involves an appropriate growth hormone provocative test with **two exceptions**: (1) patients with multiple other pituitary hormone deficiencies due to organic disease (ex., damage to the hypothalamic-pituitary region by lesions, surgery and/or radiation); and (2) patients with congenital/genetic growth hormone deficiency

[b] Caused by an inadequate secretion of endogenous growth hormone

[c] CKD = chronic kidney disease. Use until time of renal transplantation & in conjunction with optimal management of CKD.

[d] Also called non-growth hormone-deficient short stature (defined by height standard deviation score [SDS] less than or equal to −2.25) and associated with growth rates unlikely to permit attainment of adult height in the normal range in pediatric patients whose epiphyses are not closed and for whom diagnostic evaluation excludes other causes associated with short stature that should be observed or treated by other means.

[e] SHOX = short stature homeobox-containing gene

[f] Concomitant antiretroviral therapy is necessary

[g] For children who fail to manifest catch-up growth by 2 years of age

[h] For children with no catch-up growth by 2 to 4 years of age

† Brand Tev-Tropin was renamed to Zomacton

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