

Table of Contents:

A. Congenital Hypothyroidism (Neonate)	pg. 3
B. Congenital Hypothyroidism (Child)	pg. 3
C. Acquired Hypothyroidism	pg. 4
D. Autoimmune Thyroiditis/Hypothyroidism	pg. 4
E. Central Hypothyroidism	pg. 4
F. Acquired Hyperthyroidism	pg. 5
G. Autoimmune Hyperthyroidism (Grave's Disease)	pg. 5
H. Neonatal Hyperthyroidism	pg. 5
I. Goiter	pg. 6
J. Thyroid Nodule	pg. 7
Thyroid: Key Facts	pg. 8
K. Diabetes Mellitus - Type 1 and Type 2	pg. 9
L. Hyperglycemia	pg. 9
M. Impaired Glucose Tolerance	pg. 9
N. Impaired Fasting Glucose	pg. 9
O. Morbid Obesity	pg. 10
P. Acanthosis Nigricans	pg. 10
Diabetes: Key Facts	pg. 10

(Table of contents continued on next page)

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

Table of Contents (continued):

Q. Short Stature pg. 11

R. Failure to Thrive pg. 12

Growth: Key Facts pg. 13 - 14

S. Precocious Puberty/Premature Thelarche - Girls pg. 15

T. Precocious Puberty - Boys pg. 16

Precocious Puberty: Key Facts pg. 16

U. Premature Adrenarche - Girls pg. 17

V. Premature Adrenarche - Boys pg. 18

W. Delayed Puberty pg. 19

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

A. Congenital Hypothyroidism (Neonate) [ICD-9 Code: 243.0] [ICD-10 Code: E00.*, E03.*]

Clinical Findings

- Neonate with abnormal Newborn Screening Test

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.
- On-Call Phone #
Day:
714-509-8634
- After Hours:
714-765-7679

Pre-Referral Workup

- ▶ Confirmatory TSH, Total T4 or Free T4

Referral Requirements

- ▶ All clinical notes and laboratory results including growth chart

B. Congenital Hypothyroidism (Child) [ICD-9 Code: 243.0] [ICD-10 Code: E00.*, E03.*]

Clinical Findings

- Known or treated child with abnormal thyroid function test

Referral Timeframe

- ▶ First available appointment, but call the NP/MD on-call to begin therapy until patient can be seen.

Pre-Referral Workup

- ▶ Current TSH, Total or Free T4

Referral Requirements

- ▶ All clinical notes and laboratory results including growth chart

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

C. Acquired Hypothyroidism [ICD-9 Code: 244.8] [ICD-10 Code: E01.8, E03.8, E02, E03.3]

D. Autoimmune Thyroiditis/Hypothyroidism [ICD-9 Code: 245.2] [ICD-10 Code: E06.3]

Clinical Findings

- Elevated TSH
- Low Total T4 or Free T4

Referral Timeframe

- ▶ First available appointment, but call the NP/MD on-call to begin therapy until patient can be seen

Pre-Referral Workup

- ▶ Current TSH, Total T4 or Free T4, Anti-Thyroglobulin Antibody and Anti-TPO Antibody
- ▶ If TSH is abnormal but <10 uU/ml and the Total T4 or Free T4 are normal, obtain thyroid antibodies and repeat the TSH, Total T4 or Free T4 in 2-3 months. If TSH rising and antibodies are positive, refer
- ▶ Thyroid ultrasound is unnecessary unless the gland is asymmetric or nodules are palpable

Referral Requirements

- ▶ All clinical notes and laboratory records including growth chart

E. Central Hypothyroidism [ICD-9 Code: 244.8] [ICD-10 Code: E01.8, E02, E03.3, E03.8]

Clinical Findings

- Low to Low normal TSH with low Total T4 or Free T4
- History of traumatic brain injury, midline facial defects, brain irradiation, hypoxic brain injury

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.
- ▶ On-Call Phone #
Day:
714-509-8634
- ▶ After Hours:
714-765-7679
- ▶ After discussion with NP/MD on-call, may be asked to obtain MRI of the brain and pituitary with and without contrast

Pre-Referral Workup

- ▶ Confirmatory TSH, Total T4 or Free T4
- ▶ Consider repeat of labs prior to referral to assure validity

Referral Requirements

- ▶ All clinical notes and laboratory records including growth chart

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

F. Acquired Hyperthyroidism [ICD-9 Code: 242.90] [ICD-10 Code: E05.90]

G. Autoimmune Hyperthyroidism (Grave's Disease) [ICD-9 Code: 242.00] [ICD-10 Code: E05.00]

Clinical Findings

- Hypertension
- Tachycardia
- Goiter
- Exophthalmos
- TSH < 0.1 uU/ml
- Elevated Total T4 or Free T4, T3

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.
- On-Call Phone #
Day:
714-509-8634
- After Hours:
714-765-7679

Pre-Referral Workup

- ▶ Current TSH, Total T4 or Free T4, Total T3, Thyroid Stimulating Immunoglobulin (TSI), Thyrotropin Binding Immunoglobulin (TBII), Anti-Thyroglobulin Antibody, Anti-TPO Antibody

Referral Requirements

- ▶ All clinical notes and laboratory records including growth chart

H. Neonatal Hyperthyroidism [ICD-9 Code: 775.3] [ICD-10 Code: P72.1]

Clinical Findings

- Maternal history of Graves Disease
- Hypertension
- Tachycardia
- Failure to Thrive
- Low TSH
- Elevated Total T4 or Free T4

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.
- On-Call Phone #
Day:
714-509-8634
- After Hours:
714-765-7679

Pre-Referral Workup

- ▶ TSH, Total T4 or Free T4, Total T3, Thyroid Stimulating Immunoglobulin (TSI), Thyrotropin-Binding Immunoglobulin (TBII)
- ▶ If possible, check maternal Anti-TPO Antibody, Anti-Thyroglobulin Antibody and TSI/TBII

Referral Requirements

- ▶ All clinical notes and laboratory records including growth chart

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

I. Goiter [ICD-9 Code: 240.9] [ICD-10 Code: E01.2, E04.9, E01.0]

<u>Clinical Findings</u>	<u>Referral Timeframe</u>	<u>Pre-Referral Workup</u>	<u>Referral Requirements</u>
<p>URGENT REFERRAL IF:</p> <ul style="list-style-type: none"> Asymmetric gland Increasing size or causing discomfort Abnormal thyroid biopsy 	<p>▶ URGENT: Call NP/MD on-call to discuss and start treatment. If symptomatic, call NP/MD on-call to discuss</p> <p>On-Call Phone # Day: 714-509-8634</p> <p>After Hours: 714-765-7679</p>	<ul style="list-style-type: none"> ▶ If asymmetric, enlarging in size, or palpable node, obtain thyroid ultrasound ▶ Current TSH, Total T4 or Free T4, Anti-Thyroglobulin Antibodies and Anti-TPO Antibodies 	<ul style="list-style-type: none"> ▶ All clinical notes and laboratory records including growth chart
<p>ROUTINE REFERRAL IF:</p> <ul style="list-style-type: none"> Abnormal TSH, Total T4, or Free T4 Abnormal thyroid antibodies Abnormal thyroid ultrasound showing goiter, multiple small nodules 	<ul style="list-style-type: none"> ▶ If questions, call NP/MD on-call to discuss 	<ul style="list-style-type: none"> ▶ Current TSH, Total T4 or Free T4, Anti-Thyroglobulin Antibodies and Anti-TPO Antibodies 	<ul style="list-style-type: none"> ▶ All clinical notes and laboratory records including growth chart ▶ Imagins studies ▶ If palpable nodule, see Thyroid Nodule section ▶ If abnormal thyroid function tests, see Hypothyroid or Hyperthyroid section

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](#) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

J. Thyroid Nodule [ICD-9 Code: 242.10] [ICD-10 Code: E05.10]

<u>Clinical Findings</u>	<u>Referral Timeframe</u>	<u>Pre-Referral Workup</u>	<u>Referral Requirements</u>
<p>URGENT REFERRAL IF: Palpable nodule >1.0 cm</p> <ul style="list-style-type: none"> Family history of thyroid cancer or MEN (multiple endocrine neoplasia) Increasing size of nodule 	<p>▶ URGENT: Call NP/MD on-call to discuss and start treatment. If symptomatic, call NP/MD on-call to discuss</p> <p>On-Call Phone # Day: 714- 509-8634</p> <p>After Hours: 714-765-7679</p>	<ul style="list-style-type: none"> ▶ Current TSH, Total T4 or Free T4, Anti-Thyroglobulin Antibodies and Anti-TPO Antibodies ▶ Calcitonin if recommended by CHOC Children's Specialist in Endocrinology ▶ Thyroid Ultrasound 	<ul style="list-style-type: none"> ▶ All clinical notes, laboratory or ultrasound results and growth chart ▶ Fine Needle Aspiration may be indicated
<p>ROUTINE REFERRAL IF: Non-palpable nodule < 1.0 cm</p> <ul style="list-style-type: none"> Nodule on thyroid ultrasound 	<ul style="list-style-type: none"> ▶ If concern for thyroid cancer, please call NP/MD on-call to discuss 	<ul style="list-style-type: none"> ▶ Current TSH, Total T4 or Free T4, Anti-Thyroglobulin Antibodies and Anti-TPO Antibodies ▶ Calcitonin if recommended by CHOC Children's Specialist in Endocrinology ▶ Thyroid Ultrasound 	<ul style="list-style-type: none"> ▶ All clinical notes, laboratory or ultrasound results and growth chart

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

Thyroid: Key Facts to Remember

Facts to Remember:

- We often see slight elevations in TSH (5-10 uU/ml) in obese children secondary to metabolic syndrome and obesity. No endocrine referral is indicated unless the thyroid antibodies are positive.
- Alopecia or hair loss with normal TSH, Total T4 or Free T4 does not indicate an endocrinopathy and referral is unnecessary.
- Obtaining a T3 Uptake or Free T4 Index is not usually helpful. Instead it should be a Total T3 level or Free T4.
- Children with Trisomy 21 often have mildly elevated TSH levels (hyperthyrotropenemia) with normal Total T4 or Free T4. Generally referral is not needed unless there are positive thyroid antibodies, or rising TSH. Call with questions.
- Children with positive thyroid antibodies but normal thyroid function tests may never go on to develop hypothyroidism. The thyroid function tests just need to be followed periodically and if abnormal referral is appropriate.
- **Thyroid Nodules:** There is a rising incidence of thyroid nodules in the pediatric population. Small nodules (<1.0 cm) with thyroid antibodies are less concerning. Solitary nodules or nodules >1.0 cm require an urgent referral to r/o thyroid cancer. A fine needle aspiration may be indicated.

K. Diabetes Mellitus - Type 1 [ICD-9 Code: 250.03] [ICD-10 Code: E10.65] **Type 2** [ICD-9 Code: 250.02] [ICD-10 Code: E11.65]

L. Hyperglycemia [ICD-9 Code: 790.29] [ICD-10 Code: R73.09, R73.9]

Clinical Findings

- Increased thirst and urination
- Weight loss
- Vomiting (DKA)
- Lethargy (DKA)
- Deep Respirations (DKA)

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment. If symptomatic, call Emergency Dept. (911)
On-Call Phone #
Day:
714-509-8634
After Hours:
714-765-7679

Pre-Referral Workup

- ▶ Finger Stick Blood Glucose
- ▶ Urinalysis for KETONES and glucose
- ▶ If NOT acutely ill, consider STAT chemistry panel to determine disposition (direct admit vs. ER)

Referral Requirements

- ▶ IF fasting BG over 126 mg/dl or a random BG 2 hour or OGTT over 200 mg/dl, then call is URGENT
- ▶ FOR ALL NEW DIAGNOSES of Diabetes Mellitus, please inform phone concierge call is URGENT
- ▶ DKA is likely if patient is vomiting, lethargic or abnormal respirations. Send immediately to Emergency Department AND notify Endocrine MD or NP on-call.

M. Impaired Glucose Tolerance [ICD-9 Code: 790.22] [ICD-10 Code: R73.02]

N. Impaired Fasting Glucose [ICD-9 Code: 790.21] [ICD-10 Code: R73.01] (see pre-referral workup section for definitions)

Clinical Findings

- Obesity (BMI >97%ile)
- Acanthosis
- Positive Family History of Diabetes
- May NOT have increased thirst and urination

Referral Timeframe

- ▶ Routine:
First available appointment

Pre-Referral Workup

- ▶ Impaired Fasting Blood Glucose (100-125 mg/dl)
- ▶ Impaired 2 hour OGTT (140-199 mg/dl)
- ▶ HgA1C (abnormal >6%)
- ▶ 2 hour OGTT (8 years and over) - 1.75 grams of glucola/kg to max of 75 grams
- ▶ Renal Function and Liver Function tests

Referral Requirements

- ▶ Growth chart
- ▶ Laboratory results
- ▶ Recent clinical notes

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

O. Morbid Obesity [ICD-9 Code: 278.01] [ICD-10 Code: E66.01] (If Early Onset, e.g. before age 5, may be genetic condition)

P. Acanthosis Nigricans [ICD-9 Code: 701.2] [ICD-10 Code: L83]

Clinical Findings

- Obesity (BMI >97thile)
- Darkening & Thickening of skin around neck, elbow, waist, knuckles, axilla
- Irregular Menses

Referral Timeframe

- ▶ Routine:
Referrals will be evaluated

Pre-Referral Workup

- ▶ HgA1C (abnormal if >6%)
- ▶ Fasting Blood Glucose (Abnl 100-125)
- ▶ 2 hour OGTT (abnl 2 hour level above 140 mg/dl). FOR 8 years and over, use 1.75 grams of glucola/kg to max of 75 grams

Referral Requirements

- ▶ Growth chart
- ▶ Laboratory results
- ▶ Recent clinical notes

(If Obesity starts after age 5, and no lab abnormalities, then refer out to community weight management programs.)

NO ENDOCRINOLOGY REFERRAL NEEDED

Diabetes: Key Facts to Remember

Facts to Remember:

- Signs of DKA warrant an urgent call and immediate referral to Emergency Department (call 911)
 - ▶ Vomiting, Deep Respirations, Altered Level of Consciousness - Signs of Diabetic Ketoacidosis - Refer to Emergency Department (911) with call to PICU/Endocrine - Day: (714) 509-8634 or After Hours: (714) 765-7679
 - ▶ Large Ketones in Urine
 - ▶ CO2 <15 on chemistry panel
- If Diabetes is clinically apparent, then a separate fasting glucose or 2 hour OGTT are not required, please call immediately.
- Obesity before age 5 is considered Early Onset and may indicate a genetic cause of the obesity.

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

Q. Short Stature [ICD-9 Code: 783.43] [ICD-10 Code: R62.52]

<u>Clinical Findings</u>	<u>Referral Timeframe</u>	<u>Pre-Referral Workup</u>	<u>Referral Requirements</u>
<p>Poor height velocity or crossing percentiles) AND associated with severe headaches and/or blurry vision</p>	<p>URGENT: Call NP/MD on-call to discuss and start treatment.</p> <p>On-Call Phone # Day: 714-509-8634</p> <p>After Hours: 714-765-7679</p>	<ul style="list-style-type: none"> ▶ May need lab tests as below but please call to discuss. ▶ May need urgent MRI of brain and pituitary to rule out tumor. 	<ul style="list-style-type: none"> ▶ All clinical notes and laboratory results including growth chart
<ul style="list-style-type: none"> ● Current Height less than 3rd percentile for age or ● Crossing percentiles on repeated growth measurements. 	<ul style="list-style-type: none"> ▶ Routine- likely will be seen in next 3 to 4 months 	<ul style="list-style-type: none"> ▶ Evaluation of mid-parental target height ▶ IGF-I (Insulin like growth factor-I)- QUEST test code 839, Esoterix code 500282 ▶ IGF-BP3 (Insulin like growth factor binding protein 3) QUEST test code 34458, Esoterix code 500281 ▶ TSH, Free T4, CBC, Panel 18, Urinalysis ▶ Celiac screening (Anti-Tissue Transglutaminase -IgA and IgG), IgA level QUEST test codes 11073 and 539 ▶ Bone age x-ray if more than 2 years of age ▶ Please have parent bring CD or film of bone age x-ray to appointment ▶ For females, consider karyotype for Turner syndrome 	<ul style="list-style-type: none"> ▶ Growth chart ▶ Thyroid function tests ▶ Laboratory results ▶ Bone age results - Please have parent bring a copy of bone age x-ray (CD or film) to visit ▶ Relevant clinical notes ▶ All non-urgent patients referred for short stature will be sent to a growth seminar prior to Endocrine visit
<ul style="list-style-type: none"> ● Current Height greater than 3rd percentile but still concern for growth 	<ul style="list-style-type: none"> ▶ May NOT need referral based on initial evaluation 	<ul style="list-style-type: none"> ▶ Must screen with TSH level at minimum. ▶ Consider above laboratory testing and bone age x-ray if >2 years old depending on symptoms. ▶ Evaluation of mid-parental target height. (MPTH) **See page 10 for MPTH equation. 	<ul style="list-style-type: none"> ▶ Growth chart ▶ Thyroid function tests ▶ Laboratory results ▶ Bone age results - Please have parent bring a copy of bone age x-ray (CD or film) to visit ▶ Relevant clinical notes

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

R. Failure to Thrive [ICD-9 Code: 783.41] [ICD-10 Code: R62.51]

Clinical Findings

- Hypoglycemia and Failure to Thrive

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.
On-Call Phone #
Day:
714-509-8634

After Hours:
714-765-7679

Pre-Referral Workup

- ▶ May need same lab tests as below, but please call to discuss.

Referral Requirements

- ▶ All clinical notes and laboratory results including growth chart

- Height less than 3rd percentile and weight less than 3rd percentile

- ▶ Routine- likely will be seen in next 3 to 4 months

- ▶ IGF-BP3 (Insulin like growth factor binding protein 3) QUEST test code 34458, Esoterix code 500281
- ▶ TSH, Free T4, CBC, Panel 18.
- ▶ Celiac screening (Anti-Tissue Transglutaminase - IgA and IgG), IgA level QUEST test codes 11073 and 539

- ▶ Growth chart
- ▶ Thyroid function tests
- ▶ Laboratory results
- ▶ Bone age results - Please have parent bring a copy of bone age x-ray (CD or film) to visit
- ▶ Relevant clinical notes

- Height 3rd percentile or greater, but weight less than 3rd percentile

- ▶ May NOT need referral based on initial evaluation

- ▶ Consider evaluation by Gastroenterology (714) 509-4099

- ▶ Please call NP/MD on-call for any questions.

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

Growth: Key Facts to Remember

When to worry:

- Poor height velocity associated with severe headaches and/or blurry vision may be a brain tumor.
- If a child is short and in puberty, this may increase the urgency of referral.
- Short stature is more concerning if a child has a predicted height that is more than 4 inches shorter than expected for family

Facts to Remember:

- Constitutional delay is the MOST common cause of short stature.
- FDA criteria for growth hormone treatment in idiopathic short stature is a predicted adult height of less than 4'11" for girls or 5'4" for boys
- Random growth hormone levels are NOT useful, please measure IGF-I and IGF-BP3 instead.
- If the bone age shows fused growth plates ≥ 14 in girls or ≥ 16 in boys, then NO Endocrine referral is needed. There are NO treatment options to increase height once growth plates are fused.
- Consider genetics referral if dysmorphic features are present.

(Growth: Key Facts to Remember continued on next page)

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

Growth: Key Facts to Remember

Facts to Remember (continued):

- Midparental target height (MPTH) equation is DIFFERENT for boys and girls.
 - ▶ $MPTH(\text{boys}) = [(\text{mom's height} + 5 \text{ in}) + (\text{dad's height})] \div 2$
 - ▶ $MPTH(\text{girls}) = [(\text{mom's height}) + (\text{dad's height} - 5 \text{ in})] \div 2$
 - ▶ MPTH is the average genetic target but normal children can be 2 to 4 inches shorter or taller than their target.
- NOTE: All non-urgent patients referred for short stature will be sent to a CHOC growth seminar.
- Key to evaluation of growth requires comparison of weight and length/ height curves.
- If weight is decreasing more than length/ height, refer to gastroenterology PRIOR to Endocrinology.
- IGF-I (Insulin like growth factor-I) levels will often be low in patients with low weight and may NOT be indicative of growth hormone deficiency.

S. Precocious Puberty/Premature Thelarche (Girls) [ICD-9 Code: 259.1] [ICD-10 Code: E30.1, E30.8]

<u>Clinical Findings</u>	<u>Referral Timeframe</u>	<u>Pre-Referral Workup</u>	<u>Referral Requirements</u>
<p>Girls < 8 years</p> <ul style="list-style-type: none"> Breast development with one or more of the following signs: Progressing over time Accelerated growth Vaginal bleeding Headaches and/or visual changes Multiple Café au lait spots > 1.5 cm (possible McCune Albright Syndrome) 	<ul style="list-style-type: none"> URGENT: Call NP/MD on-call to discuss and start treatment. On-Call Phone # Day: 714-509-8634 After Hours: 714-765-7679 	<ul style="list-style-type: none"> Bone age TSH and T4 or Free T4 by dialysis Pediatric LH (Quest 36086, Esoterix 500234, Lab Corp 502286) Pediatric FSH (Quest 36087, Esoterix 500192, LabCorp 502280) Ultrasensitive Estradiol (Quest 30289, Esoterix 500152, Lab Corp 500108) 	<ul style="list-style-type: none"> Growth chart Bone age results- Please have parent bring a copy of film/CD to appointment. Lab results Relevant clinical notes with physical examination including Tanner stage.
<p>Girls 6 - 8 years</p> <ul style="list-style-type: none"> Breast development without the above signs 	<ul style="list-style-type: none"> Routine 	<ul style="list-style-type: none"> Same as above 	<ul style="list-style-type: none"> Same as above
<p>Girls 2 - 6 years</p> <ul style="list-style-type: none"> Breast development without the above signs 	<ul style="list-style-type: none"> URGENT: Call NP/MD on-call to discuss and start treatment. 	<ul style="list-style-type: none"> Same as above 	<ul style="list-style-type: none"> Same as above
<p>Girls < 2 years</p> <ul style="list-style-type: none"> Breast development without the above signs 	<ul style="list-style-type: none"> May NOT need referral 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Call Endocrinology 714-509-8634 with any questions or concerns

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

T. Precocious Puberty (Boys) [ICD-9 Code: 259.1] [ICD-10 Code: E30.1, E30.8]

Clinical Findings

Boys < 9 years

- Testicular enlargement (≥ 4 ml or > 2.5 cm)
- Penile enlargement

Referral Timeframe

- ▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.

On-Call Phone #

Day:

714-509-8634

After Hours:

714-765-7679

Pre-Referral Workup

- ▶ Confirmatory TSH, Total T4 or Free T4
- ▶ Bone age
- ▶ TSH and T4 or Free T4 by dialysis
- ▶ Pediatric LH (Quest 36086, Esoterix 500234, Lab Corp 502286)
- ▶ Pediatric FSH (Quest 36087, Esoterix 500192, LabCorp 502280)
- ▶ Pediatric Testosterone (Quest 15983, Esoterix 500286, Lab Corp 500159)

Referral Requirements

- ▶ Growth chart
- ▶ Bone age results- Please have parent bring a copy of film/CD to appointment.
- ▶ Lab results
- ▶ Relevant clinical notes with physical examination including Tanner stage.

Precocious Puberty: Key Facts to Remember

Facts to Remember:

- Standard LH, FSH, Estradiol or Testosterone assays are not reliable for children, please use test codes provided.
- Consider imaging testing such as pelvic ultrasound or brain and pituitary MRI if warranted.
- In benign premature thelarche, the nipples are not usually dark or enlarged as seen in precocious puberty.
- Fine downy and non-pigmented short hair is not considered secondary sexual pubic hair.
- Pubic hair on the suprapubic area is more indicative of precocious puberty than hair on the labial majora or scrotum.

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

U. Premature Adrenarche (Girls) [ICD-9 Code: 255.2] [ICD-10 Code: E25.0, E25.8, E25.9]

Clinical Findings

Girls < 7 years with one or more of the following signs: pubic hair, axillary hair, body odor, clitoral enlargement, but **NO** breast development

Girls 7 - 8 years with one or more of the above signs **AND** accelerated growth or clitoral enlargement

Girls 7 - 8 years with one or more of the above signs, but **NO** accelerated growth or clitoral enlargement

Referral Timeframe

▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.

On-Call Phone #
Day:
714-509-8634

After Hours:
714-765-7679

▶ **URGENT:**
Call NP/MD on-call to discuss and start treatment.

▶ Routine

Pre-Referral Workup

▶ Bone age
▶ 17-HydroxyProgesterone (Quest 17180, Esoterix 500270, LabCorp 500163)
▶ Pediatric Testosterone (Quest 15983, Esoterix 500286, Lab Corp 500159)
▶ DHEAS(Quest 402, Esoterix 500116, LabCorp 500156)

▶ Same as above

▶ Same as above

Referral Requirements

▶ Growth chart
▶ Bone age results- Please have parent bring a copy of film/CD to appointment.
▶ Lab results
▶ Relevant clinical notes with physical examination including Tanner stage

▶ Same as above

▶ Same as above

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

V. Premature Adrenarche (Boys) [ICD-9 Code: 255.2] [ICD-10 Code: E25.0, E25.8, E25.9]

<u>Clinical Findings</u>	<u>Referral Timeframe</u>	<u>Pre-Referral Workup</u>	<u>Referral Requirements</u>
Boys < 7 years with one or more of the following signs: pubic hair, axillary hair, body odor, penile enlargement, accelerated growth; but NO testicular enlargement (<4 ml or <2.5 cm)	<ul style="list-style-type: none"> ▶ URGENT: Call NP/MD on-call to discuss and start treatment. On-Call Phone # Day: 714-509-8634 After Hours: 714-765-7679 	<ul style="list-style-type: none"> ▶ Bone age ▶ 17-HydroxyProgesterone (Quest 17180, Esoterix 500270, LabCorp 500163) ▶ Pediatric Testosterone (Quest 15983, Esoterix 500286, Lab Corp 500159) ▶ DHEAS(Quest 402, Esoterix 500116, LabCorp 500156) 	<ul style="list-style-type: none"> ▶ Growth chart ▶ Bone age results- Please have parent bring a copy of film/CD to appointment. ▶ Lab results ▶ Relevant clinical notes with physical examination including Tanner stage
Boys 7 - 9 years with one or more of the above signs AND accelerated growth	<ul style="list-style-type: none"> ▶ URGENT: Call NP/MD on-call to discuss and start treatment. 	<ul style="list-style-type: none"> ▶ Same as above 	<ul style="list-style-type: none"> ▶ Same as above
Boys 7 - 8 years with one or more of the above signs, but NO accelerated growth	<ul style="list-style-type: none"> ▶ Routine 	<ul style="list-style-type: none"> ▶ Same as above 	<ul style="list-style-type: none"> ▶ Same as above

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

W. Delayed Puberty [ICD-9 Code: 259.0] [ICD-10 Code: E30.0]

Clinical Findings

- **Boys:** no testicular enlargement (<4 ml or <2.5 cm) by 14 years of age
- **Girls:** no breast development by 13 years of age or no menses by 15 years of age
Note: Girls with no menses by 15 years and notable short stature, consider Turner Syndrome.

Referral Timeframe

- ▶ Routine

Pre-Referral Workup

- ▶ Bone age
- ▶ TSH and T4 or Free T4 by dialysis
- ▶ Pediatric LH (Quest 36086, Esoterix 500234, Lab Corp 502286)
- ▶ Pediatric FSH (Quest 36087, Esoterix 500192, LabCorp 502280)
- ▶ Boys- Pediatric Testosterone (Quest 15983, Esoterix 500286, Lab Corp 500159)
- ▶ Girls- Ultrasensitive Estradiol (Quest 30289, Esoterix 500152, Lab Corp 500108)
- ▶ Karyotype (if suspect Turner Syndrome)

Referral Requirements

- ▶ Growth chart
- ▶ Bone age results- Please have parent bring a copy of film/CD to appointment
- ▶ Lab results
- ▶ Relevant clinical notes with physical examination including Tanner stage

For appointments, please call the Patient Access Center at (888) 770-2462 (888-770-CHOC)

Complete the [CHOC Children's Specialists Endocrinology Referral Request Form](http://www.choc.org/referralguidelines) located at <http://www.choc.org/referralguidelines>

Fax ALL pertinent medical records to (855) 246-2329 (855-CHOC-FAX)

Endocrinology On-Call Phone# Day: (714) 509-8634 or After Hours: (714) 765-7679

Sources used in development of these Referral Guidelines:

- Kappy MS, Allen DB, Geffner ME ed. Pediatric Practice Endocrinology, McGraw Hill Medical. 2010
- Styne DM, Pediatric Endocrinology. Lippincott Williams and Wilkins, 2004
- Sperling MA ed. Pediatric Endocrinology 3rd edition, Saunders Elsevier 2008.
- Lifshitz, F ed. Pediatric Endocrinology Volume 1. Obesity, Diabetes Mellitus, insulin Resistance, and Hypoglycemia. 5th ed. Informa Health Care, 2009
- Lifshitz, F ed. Pediatric Endocrinology Volume 2. Growth, Adrenal, Sexual, Thyroid, Calcium and Fluid Balance Disorders. 5th ed. Informa Health Care, 2009