Co-Management Guidelines
To support collaborative care, we have developed guidelines for our community providers to utilize when referring to and managing patients with the pediatric specialists at Children’s Hospital of Wisconsin. These guidelines provide protocols for jointly managing patient cases between community providers and our pediatric specialists.

### Growth Disorders
#### Short Stature

<table>
<thead>
<tr>
<th>Diagnosis/symptom</th>
<th>Referring provider’s initial evaluation and management:</th>
<th>When to initiate referral/consider refer to Endocrine Clinic:</th>
<th>What can referring provider send to endocrine Clinic?</th>
<th>Specialist’s workup will likely include:</th>
<th>Model Of Care</th>
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</thead>
<tbody>
<tr>
<td>Signs and symptoms</td>
<td>Diagnosis and Treatment</td>
<td>The following situations are usually appropriate for referral to endocrinology:</td>
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<td>• Height &lt;3rd percentile</td>
<td>1. Accurately measure height using a stadiometer</td>
<td>1. Extreme short stature (height below the 1st percentile, &gt;2.25 SD below the mean)</td>
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<td>• Height velocity &lt;5 cm per year between ages 3 and puberty (the lower limit of normal is as low as 4 cm per year in the 1-2 years before puberty, but &lt; 5 cm per year is a good cutoff for initial evaluation)</td>
<td>2. Plot height on a growth chart</td>
<td>2. Short stature (height &lt;3rd percentile) with no obvious explanation</td>
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<td>• Parental concern about height</td>
<td>3. Calculate mid-parental height, i.e. parent heights are averaged (add their heights, divide by 2) and then add 5 inches (13 cm) for boys, minus 5 inches (13 cm) for girls.</td>
<td>3. Height velocity &lt;5 cm per year</td>
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<td>4. If the child’s height is less than the 3rd percentile then he or she has short stature by definition.</td>
<td>4. Abnormal finding on initial screen (low IGF-1 or IGFBP3, abnormal TSH (urgent action needed if TSH is &gt;10)</td>
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<td>5. If his/her percentile line meets the right side of the growth chart more than 9 cm below the midparental height, then the child is too short for his/her genetic potential.</td>
<td>5. Failure of an SGA infant to catch up to the</td>
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<td>6. In such cases, consider possible</td>
<td>The evaluation will be incomplete without a copy of the child’s growth chart and ANY labs and X-rays done in the course of evaluation for short stature. Please make sure these are faxed to our office at (414)266-6749</td>
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</table>

- If not done already, we will usually check IGF-1 and IGFBP3 (to screen for growth hormone deficiency), TSH and reflex FT4 (to screen for hypothyroidism) and a bone age.
- Females will usually need a karyotype (to screen for Turner syndrome).
- Other labs will be added on a case by case basis.
- If initial labs are suspicious and a low growth velocity is confirmed, then a growth hormone stimulation test may also be performed.

Hold for future use**
Causes
- Causes (roughly in order of prevalence in clinical practice) include:
  - Constitutional delay of growth and puberty
  - Idiopathic short stature
  - Familial short stature
  - Turner syndrome in girls
  - Malnutrition (GI disease, poor intake, ADHD meds)
  - Failure of catch-up growth in SGA infants
  - Hypothyroidism
  - Growth hormone deficiency
  - Other syndromic and genetic causes of short stature
  - Drug exposure (systemic steroids, rarely high potency inhaled steroids at high doses)
  - Undiagnosed severe systemic illness (kidney disease, congenital heart disease, cystic fibrosis etc)

7. If an obvious systemic illness is present, that is the most likely cause. If weight percentile is less than height percentile, nutrition may be factor, especially for children on high dose ADHD meds. In these cases, treat underlying disease, and improve nutrition (encourage high calorie, high protein foods, such as pizza, dairy and related alternative options)

8. If no obvious cause, and not familial, it is appropriate in most cases to encourage good nutrition and see back in 6 months to reassess height velocity. But in older children (greater urgency because less time left) or in anyone with ANY suspicion of thyroid disorder, an initial screen is advisable.

6. Parental concern and desire for specialist evaluation in a child with short stature (<3rd percentile, or more than 9 cm below midparental height)

- In most cases the child will NOT be a candidate for growth hormone therapy unless a specific approved cause is found (e.g. lab-confirmed growth hormone deficiency, Turner syndrome, SHOX haploinsufficiency, Noonan syndrome, Prader-Willi syndrome, chronic renal failure, SGA with failure to catch-up).
- Please note that in most cases, idiopathic short stature is specifically excluded as a covered diagnosis by insurance plans.
9. Other labs like celiac screen (GI symptoms, poor weight gain), CMP (suspicion of liver or kidney disease), CBC (suspicion of anemia) and so on should be considered on a case-by-case basis.