A Crash Course in Failure to Thrive
April 5, 2016

Kelly E. Wood, MD
Clinical Assistant Professor
Stead Family Department of Pediatrics
Disclosures

- I have nothing to disclose
Educational Objectives

- Define failure to thrive using common anthropometric measurements.
- Discuss a systematic differential diagnosis for failure to thrive.
- Discuss the diagnostic evaluation for failure to thrive.
- Identify red flags for underlying medical condition in children / infants with failure to thrive.
Diagnosing failure to thrive

- Weight for age < 5%*
- Weight for length < 5%
- Weight deceleration crossing 2 major percentiles
- Body mass index for age < 5%
- Rate of weight gain less than expected for age

* some use 3%
# Differential Diagnosis

<table>
<thead>
<tr>
<th>INADEQUATE CALORIC INTAKE</th>
<th>MALABSORPTION</th>
<th>INCREASED CALORIC NEED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infant or toddler</strong></td>
<td></td>
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<tr>
<td>Breastfeeding problem</td>
<td>Food allergy</td>
<td>Thyroid disease</td>
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<tr>
<td>Improper formula preparation</td>
<td>Cystic fibrosis</td>
<td>Chronic infection or immunodeficiency</td>
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<tr>
<td>Gastroesophageal reflux</td>
<td>Pyloric stenosis</td>
<td>Chronic disease – lung, heart, kidney</td>
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<tr>
<td>Caregiver depression</td>
<td>Gastrointestinal malformation</td>
<td>Autoimmune</td>
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<tr>
<td>Lack of food availability</td>
<td>Inborn error of metabolism</td>
<td>Medication</td>
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<tr>
<td>Cleft lip or palate</td>
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<td>Malignancy</td>
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<tr>
<td>Oral aversion / behavioral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child abuse</td>
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</tbody>
</table>

| **Child or adolescent**  |               |                      |
| Mood disorder            | Food allergy  | Thyroid disease      |
| Eating disorder          | Celiac disease | Chronic infection or immunodeficiency |
| Gastroesophageal reflux  | Cystic fibrosis | Chronic disease – lung, heart, kidney |
| Irritable bowel syndrome | Inflammatory bowel disease | Autoimmune |
| Child abuse              | Inborn error of metabolism | Medication |
|                          |               | Malignancy           |
Diagnostic evaluation

- Good history with full review of systems
  - Age
  - Associated symptoms
  - Feeding patterns
- Good physical exam
  - Signs of malnutrition
  - Dysmorphic features
  - Organomegaly
  - Bruising
- Evaluation of growth charts
  - Pattern recognition
- Determine degree of malnutrition
- Laboratory testing
- Multidisciplinary evaluation
2 to 20 years: Boys
Stature-for-age and Weight-for-age percentiles

NAME B.H.  
RECORD # case 4a

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight</th>
<th>STATURE</th>
<th>AGE (YEARS)</th>
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*To Calculate BMI: Weight (kg) = Stature (cm) - Stature (cm) x 0.0006 or Weight (lb) = Stature (in) - Stature (in) x 700


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Feeding history – KEY

• Caloric intake
  – Exact foods
  – Exact amounts
• Mixing of formula
• Number of meals and snacks per day
• Availability of food
• Location of meals
• Eating habits
• Dietary restrictions
• Parent – child interactions
Case - 4 month old male admitted for FTT.

- Born at 36 weeks gestation with a birth weight of 2.55 kg (AGA, 13%).
- Hadn’t seen a physician since birth hospitalization.
- Formula fed.
- Recently living with extended relatives rather than parents.
- Presented to outside clinic for immunizations. Weight was 4.5 kg (<3%). Length and FOC 15%.
- Gained 25 g / day since birth.
- Reported post prandial forceful emesis after every feed.
- Exam was normal. Didn’t look emaciated.

- *Did he need admission? Was he failing to thrive?*

Red flags: no medical care, high risk social situation, reported repeated emesis after every feed.
Reasons to hospitalize

• Failed outpatient management
• Concerns for neglect and/or abuse
• Unreliable and/or impaired caregiver
• Moderate to severe malnutrition
• Poor historian
• Medical condition needing management
Red flags

- Failure to gain weight despite adequate caloric intake
- Developmental delay / dysmorphic features
- Hypotonia / poor reflexes
- Microcephaly
- Organomegaly
- Lymphadenopathy
- Bruising / fractures
- Recurrent infections
- Recurrent vomiting, diarrhea
- Evidence of dehydration
- Signs of heart failure
Treatment

• Nutritional counseling / guidance
• Dietary supplements
• Enteral tube feedings
• Management of underlying condition
• Behavioral interventions
• Removal from home
• Close follow up
  – Home nursing visits


