Various Definitions of FTT:

- Weight < 5th percentile for age
  
  **Note:** Use special growth charts when indicated (prematurity, Down, Turner Syndromes)

- Weight for length < 5th percentile for age

- A rate of weight gain that is exhibited by a decrease in 2 major percentiles (90th, 75th, 50th, 25th, 10th, 5th % percentiles) over time

- Lack of height growth due to poor weight gain over time that cannot be attributed to an identifiable organic cause

- Lack of appropriate growth in head circumference following previous decrease in height growth rate and poor weight gain that cannot be attributed to an identifiable organic cause

Diagnostic Classification of Causes and Selected Examples of Failure to Thrive

- **Inadequate Nutritional Intake**
  - Not enough food offered
    - Food insecurity
    - Poor knowledge of child’s needs
    - Poor transition to table food
    - Avoidance of high-calorie foods
    - Formula dilution
    - Excessive juice
    - Breastfeeding difficulties
    - Neglect
  - Child not taking enough food
    - Oromotor dysfunction
    - Developmental delay
    - Behavioral feeding problem
    - Altered oromotor sensitivity
    - Pain and conditioned aversion
  - Emesis
    - Gastroesophageal reflux
    - Malrotation with intermittent volvulus
    - Increased intracranial pressure

- **Malabsorption**
  - Cystic fibrosis
  - Celiac disease
  - Food protein insensitivity or intolerance

- **Increased Metabolic Demand**
- Insulin resistance (e.g., intrauterine growth restriction)
- Congenital infections (e.g., human immunodeficiency virus, TORCH)
- Syndromes (e.g., Russell-Silver, Turner, Down)
- Chronic disease (e.g., cardiac, renal, endocrine)

**Some Points to Consider When Taking FTT History**

<table>
<thead>
<tr>
<th>Feeding History</th>
<th>Diet History</th>
<th>Social History</th>
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<tbody>
<tr>
<td>- When, where, and with whom the child eats.</td>
<td>- Details of everything the child eats.</td>
<td>- How does the child interact with the family?</td>
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<td>- Feeding/breastfeeding position.</td>
<td>- Be specific, keep a detailed food log.</td>
<td>- Parental description of patient’s temperament.</td>
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<td>- Does infant make eye contact while feeding?</td>
<td>- Assess if formula is prepared properly.</td>
<td>- Financial stressors, difficulty buying food.</td>
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<td>- Distractions during feeding (TV, toys, siblings).</td>
<td>- Quantify caloric intake (diet log).</td>
<td>- Identify all caregivers who feed the patient.</td>
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<td>- Duration of each feeding, tiring out.</td>
<td>- History of excessive juice, soda, cow’s milk.</td>
<td>- Parental history of depression or mental illness.</td>
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<td>- Does patient seem hungry at feeding time?</td>
<td>- Vegetarian or unusual diet.</td>
<td>- Indicators of substance abuse in the family.</td>
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<td>- Does the infant or child resist eating?</td>
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<td>- Indicators of domestic violence.</td>
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<tr>
<td>- How does caretaker know when child is hungry/full?</td>
<td></td>
<td>- History of CPS involvement with the family.</td>
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<td>- Are there struggles over feeding?</td>
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<td>- Spit-up or vomiting associated with feeds?</td>
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**Recommendations**

- A consistent, multidisciplinary group of healthcare providers (including, but not limited to, social workers, occupational/speech therapists, nutritionists/dietitians, nurses, advanced practice nurses, and pediatricians) should be involved in the management of children with FTT (*Hobbs 1996*).

- Standardized admission to an inpatient unit is **not** necessary for all children with FTT.

  **Note:** While studies have shown that children with FTT do have improved catch-up growth when admitted to an inpatient unit, these studies lack long term follow-up of growth following discharge and assessment of developmental outcomes (*Fryer 1988*).
An institution or practice might consider the establishment of an organized, multidisciplinary team of health care providers to form a “Grow Team” in order to improve the ease of access to services for families with children who carry the diagnosis of FTT.

There is insufficient evidence and lack of consensus to make a recommendation for routine or standardized inpatient management of FTT, including criteria for when discharge is appropriate.

There is no evidence that a panel of standardized or routine laboratory screening tests for FTT is indicated in the absence of guiding evidence from the history and physical.

When the physician feels that laboratory studies are warranted, even when there are no specific clinical indications, a reasonable selection might include a CBC with red cell indices (to evaluate for anemia and iron deficiency), a complete chemistry panel (including tests for renal and hepatic function), celiac screening, stool examination for fats and reducing substances, and a sweat chloride test for cystic fibrosis. Screening for hypothyroidism or growth hormone deficiency should be considered only if the child’s length has decelerated and is below the 50th percentile on the length-for-age chart.

Children diagnosed with failure to thrive need to receive about 150 percent of the recommended daily caloric intake for their expected, not actual, weight for age:

<table>
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<tr>
<th>Age</th>
<th>Daily Recommended Intake</th>
<th>Needed in FTT for catch-up</th>
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<tr>
<td>0-6 mo</td>
<td>108 kcal/kg/d</td>
<td>158 kcal/kg/d</td>
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<tr>
<td>6-12 mo</td>
<td>98 kcal/kg/d</td>
<td>147 kcal/kg/d</td>
</tr>
<tr>
<td>12-36 mo</td>
<td>102 kcal/kg/d</td>
<td>153 kcal/kg/d</td>
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Discussion/summary of evidence

FTT in the pediatric population has traditionally been a challenging diagnosis for health care providers to evaluate and treat in both the inpatient and outpatient setting. Treatment protocols for FTT vary immensely between healthcare providers. There is insufficient evidence in the literature to support a specific protocol for management of FTT that would result in improvement in the sustained growth of children with FTT.

In 1988, Fryer published a meta-analysis that compiled the evidence from eight trials that studied the efficacy of inpatient admission for FTT (Fryer 1988). This study concluded that hospitalization favorably influenced the growth of children with FTT, stating that hospitalization approximately doubled their probability of catch-up growth. In contrast, psychosocial development only moderately improved with inpatient admission. The author was careful to note, however, that none of the studies in the meta-analysis evaluated long-term growth and developmental outcomes in children admitted for FTT. Therefore, while inpatient admission may result in short-term improvements in growth, the long-term efficacy of inpatient admission for FTT is unknown. While
inpatient admission may be undeniably necessary in severe cases (i.e. dehydration, electrolyte abnormalities, or monitoring for re-feeding syndrome) or in complicated social situations, the cost to the healthcare system for inpatient admission may outweigh the long-term benefits.

Five identified studies focused on various intensive outpatient management protocols and their effect on growth and psychosocial development of children with FTT. A summary of the studies is compiled below.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Outcome</th>
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<tr>
<td>(Black 1995)</td>
<td>Evaluated the efficacy of a one year home intervention protocol in children with FTT. (Randomized Controlled Trial)</td>
<td>1 year following intervention, no significant improvement in weight for age, height for age, or weight for height was noted in intervention group as compared to the control group. Children with FTT in home intervention group also experienced less of a decline in cognitive development and receptive language, and were noted to have higher interactive competence, were living in more “child centered” homes, and parents were more in control of parent-child interactions over time than those in the control group.</td>
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<td>(Hutcheson 1997)</td>
<td>Evaluated effects of risk status on the impact of home interventions in children with FTT. After receiving home intervention for three years children were followed for a total of eight years. (Randomized Controlled Trial)</td>
<td>Among families with a lower socioeconomic status that had children with FTT, home intervention was most useful in among mothers with a low negative affectivity.</td>
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<td>(Raynor 1999)</td>
<td>Evaluated the effectiveness of home intervention with a trained health visitor in children with FTT. (Randomized Control Trial)</td>
<td>Both children in the intervention and control groups exhibited improved wt gain, developmental scores, and energy intake. Children in control group had significantly more dietary referrals, social service involvement, hospital admissions, and less compliance with physician appointments.</td>
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<tr>
<td>(Wright 1998)</td>
<td>Evaluated the efficacy of a home intervention specialist in children with FTT. Randomized Controlled Trial</td>
<td>In children under the age of two, 76% of those children who received a home intervention specialist had recovered from their diagnosis of FTT at the time of follow-up, while only 55% of those in the control group had recovered.</td>
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References

Review Articles


Other References


