FAILURE TO THRIVE: RETHINKING OUR TREATMENT GOALS

Darren Fiore, MD
University of California San Francisco
Associate Chief & Fellowship Director
Division of Pediatric Hospital Medicine

UCSF Benioff Children's Hospital

Learning Objectives

- Recognize that most children with FTT do not have an underlying medical condition.
- Approach evaluation in a targeted, rational way, limiting excessive diagnostic tests and hospitalization.
- Discuss importance of observation of feeding behaviors and recording of nutritional intake over time in the evaluation of FTT.

Introduction

- FTT is not a diagnosis, but a *sign* describing an underlying problem.
- Describes combination of undernutrition and deficient growth over time.
- Typically refers to poor weight gain, but may impact length and HC in severe cases.
- Other terms include: poor growth, undernutrition, or growth deficiency.

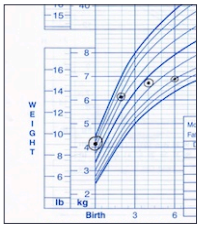
Question: How is FTT defined?

1. Weight < 5th percentile
2. Crossing of two %ile lines on growth curve
3. Weight for length < 10th percentile
4. Rate of daily wt gain < than expected for age
5. All of the above
6. None of the above

Definition

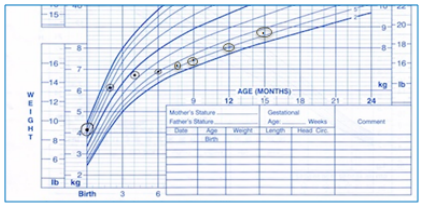
- Several definitions based on anthropometric criteria, but none is uniformly accepted:
  - Weight < 5th percentile
  - Crossing of two percentile lines on growth curve
  - Weight for height < 10th percentile
  - Rate of daily weight gain < than expected for age
- Most of these are flawed.
- *Practical definition*: Inadequate growth over time relative to standard growth charts after taking into account age, gender, ethnicity.

Question: Are you worried?



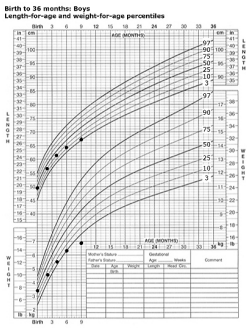
1. Yes
2. No
3. Not sure, want to see more growth points.

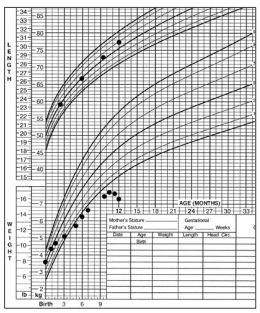
Question: How about now?



1. Yes
2. No
3. Still not sure

FTT Growth Curve Examples





Etiology

- Often multifactorial, resulting from a complex interplay between psychosocial, behavioral, and physiological factors.
- Old terms ‘organic’ and ‘non-organic’ FTT are oversimplified and are no longer used.
- Yet, an old paradigm continues to shape clinical care.

Pathophysiology

- 3 mechanisms lead to poor growth:
  - Inadequate caloric intake
  - Inadequate absorption of calories
  - Increased energy requirements

Inadequate Intake

- Due to:
  - Abnormal suck/swallow
  - Aversion
  - Early satiety
  - Psychosocial factors (often considered dx of exclusion, but in reality it's often immediately obvious from history)
- Common examples:
  - Anatomic or neurologic abnormalities can interfere with feeding
  - Cleft palate or other oropharyngeal anomaly
  - Brain injury
  - Delayed gastric emptying causing early satiety
  - GERD causing pain after eating (with secondary oral aversion or habitual early cessation of feeding)
  - Psychosocial problems or inadequate feeding

Inadequate Absorption

- Inherited or acquired GI conditions:
  - CF
  - Cow's milk protein allergy
  - Post-infectious villous atrophy
- Malabsorption syndromes (typically cause abnormal stool):
  - Smelly bulky stools (cystic fibrosis)
  - Bloody or mucousy stools (cow's milk allergy)
  - Persistent watery stools (villous atrophy)

Increased Metabolic Demand

- Cardiac disease (CHF)
- Pulmonary disease (BPD/CLD)
- Severe chronic anemia
- Chronic acidosis (RTA)
- Chronic inflammation (IBD)
- Endocrinopathy (hyperthyroidism)
- Malignancy
- Inborn error of metabolism
- Chronic infection (HIV)

Key Point

- The long list of uncommon causes of FTT often triggers an exhaustive, expensive, and poorly-focused evaluation rather than a targeted, rational, limited work-up based on history, physical and common conditions.

Why Does This Happen?

- Flawed paradigm handed down over decades.
- Assumes all causes are equally likely.
- Teaches us to rule out the 'bad stuff' before evaluating common psychosocial and behavioral causes ('diagnosis of exclusion').
- Blurs border between having a problem vs. a disease.
- Assumes FTT is a diagnosis rather than a symptom of a larger problem.

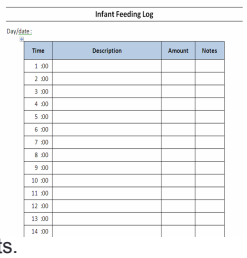
Rethinking Our Approach

- Approach FTT as a symptom of undernutrition.
- Most children with FTT are not sick, but some may have a problem that needs to be addressed.
- Those that *are* sick can usually be readily identified by their symptoms.
- For the tiny number of children who are sick, and who don't have other symptoms, it is extremely rare that a delay in that diagnosis would affect outcome.

Rethinking Our Approach

- Furthermore…
- For the large majority of kids with poor growth due to social and behavioral factors, extensive diagnostic work-ups harm the patient and undermine efforts to focus on the real issues.

Evaluation


Infant Feeding Log

Day/date:

Time	Description	Amount	Notes
1 :00			
2 :00			
3 :00			
4 :00			
5 :00			
6 :00			
7 :00			
8 :00			
9 :00			
10 :00			
11 :00			
12 :00			
13 :00			
14 :00			

- Begins with thoughtful H&P.
- Meticulous diet, feeding, and social history.
- Judicious use of diagnostic tests.
- Laboratory investigation is unlikely to reveal an organic cause in the absence of evidence from the initial H&P.

Question:

2,607 lab tests on 185 patients with FTT. How many test results helped establish a diagnosis? (Sills, JAMA, 1974)

1. 0.4%
2. 4%
3. 14%
4. 24%
5. 54%

Newer Evidence?

- Today, there still is no evidence to support the extensive, systematic use of screening laboratory evaluations in diagnosing FTT.

But I *really* want to test for something…

- If you must…
- Limit to basic, low-cost screening tests:
  - CBC with red cell indices (to evaluate for anemia and iron deficiency)
  - Complete chemistry panel (including tests for renal and hepatic function)
  - Celiac screening
  - Urinalysis (to evaluate for infection or RTA)
  - Stool examination for fats and reducing substances
  - Sweat chloride (for CF)
  - Screening for hypothyroidism or growth hormone deficiency should be considered only if length has decelerated and is < 50th percentile on the length-for-age chart.

Exam

- The goals of PE include identification of signs of genetic disorders or medical diseases contributing to undernutrition and child abuse or neglect.

- Observe feeding
  - Suck/swallow
  - Caretaker response to hunger/satiety
  - Tone of the feeding interaction
  - Is the caretaker irritable, punitive, disengaged, intrusive?
  - Is child apathetic, irritable, noncompliant, provocative?

Systematic Approach

- Consider whether or not there is actually a problem:
  - Is child symptomatic?
  - Is growth pattern a variation of normal?
  - What's the child's behavior and development like?
  - Who is worried: parent or you?

Systematic Approach

- Is the child presenting with dysmorphic features or constitutional, respiratory, GI, or neurological symptoms?
- If so, evaluate for those diseases, and refrain from calling it FTT.
- If not…

Systematic Approach

- Meticulous evaluation of the feeding and psychosocial environment ***first***.
- Re-focus the parents and providers on this goal.
- Limit revisiting of organic possibilities.
- Limit lab testing, hospitalization and medicalization.

Treatment Goals

- Multiple experienced people observe feedings.
- Initiate caloric supplements.
- Involve an experienced social worker, feeding specialist, nutritionist, RN, NP, MD.
- Monitor weight gain closely over time (weeks to months, not days).
- Arrange home-based support (visiting RN).
- Involve CPS if necessary.

Indications for Hospitalization

- Severe malnutrition requiring inpatient monitoring for re-feeding syndrome.
- Dehydration.
- Serious intercurrent medical problem.
- Psychosocial circumstances putting child at risk for immediate harm.
- Failure to respond to several months of outpatient mgmt.
- Extreme parental impairment or anxiety.
- Sometimes, initiation of NG feeds.

Hospitalization Often Unnecessary To…

…document caloric intake.
…document short-term weight gain.
…expedite diagnostic work-up in a stable child.
…obtain sub-specialty consultation in a stable child.
…evaluate problematic parent-child interaction.

Catch-Up Growth

- Children with FTT need ~150% of recommended daily caloric intake based on their expected (not actual) weight.
- Caloric needs for catch up growth:

Age	DRI	FTT
0-6 mo	108 kcal/kg/d	158 kcal/kg/d
6-12 mo	98 kcal/kg/d	147 kcal/kg/d
12-36 mo	102 kcal/kg/d	153 kcal/kg/d

- Aim to achieve target over ~7 days.

Response to Therapy

- Expect catch-up growth to start within 1-2 wks.
- Often takes 6-12 months to restore weight.
- Intake and growth spontaneously decelerate toward normal levels.
- Mild refeeding syndrome can occur.
- Supplemental NG feeds have a role after failed trial of 1-2 months of adequate oral intake.

Summary

- FTT is a *sign* describing an underlying problem.
- Decreased intake is the typical cause of FTT in most cases.
- Diagnostic testing can be wasteful, expensive, and time consuming and often detracts from addressing the real issues resulting in poor intake.
- Hospitalization may have a limited role in a small subset of cases of FTT.

Consult a Hospitalist 24/7:
UCSF Benioff Children's Hospital Access Center: 877-UC-CHILD