Failure to Thrive

Introduction

Most children who receive this diagnosis are less than three years old. The great majority of them do not have organic disease. Greater than 80% fail to thrive due to non-organic causes. In this context Failure to Thrive (FTT) is secondary to inadequate caloric intake. One-third of this non-organic FTT is accidental, two-thirds is non-accidental. Organic disease is responsible for <20% of cases. Any organic disorder, if severe enough, can impair weight gain and hence cause FTT. Remember coincident non-organic FTT can complicate organic disorders.

Causes of accidental, non-organic FTT include ignorance, poverty and breast feeding failure. Non-accidental non-organic FTT includes more severe and complex conditions such as neglect, emotional abuse and Munchausen's syndrome by proxy.

Diagnosis

Failure to thrive is defined as disproportionate failure to gain weight in comparison to height. One suggested working definition is “a weight deviation downward from the true percentile (defined as the maximum percentile reached between 4-8 weeks of age) crossing two or more percentile lines and persisting for more than one month”. Failure to thrive does not mean failure to grow. Weight gain is primarily affected, there is less effect on length and minimal effect on head circumference.

Do not be obsessed by the third centile

a] Most children with weight <3rd centile do not have FTT. Excluding small but proportionate children, avoids mislabelling normal children.

b] Do not wait until the third centile is crossed before calling it FTT. Infants can be failing to thrive with severe deceleration of weight gain, well before they cross the third centile.

Principles to guide management

1 Establish the diagnosis:

Assess energy and nutrient intake - For formula fed infants ask in detail about how the formula is prepared (see New Ethicals OTC section) and what else the infant drinks, e.g. excessive fruit juice intake can result in FTT. For all children obtain detailed history of what is offered and what is consumed in a 24 hour period. Consult the Plunket Nurse and/or the public health nurse and the community dietician.

Assess parent-child attachment - From interaction with you present and from consultation with community nurse.

Developmental assessment is crucial - With non-organic failure to thrive all milestones are usually delayed by the time the infant reaches four months of age. Areas dependent upon environmental interactions, such as language development and social adaptation, are often disproportionately delayed.

Common physical examination findings in non-organic failure to thrive:

- Signs of failure to gain weight e.g. loss of fat, prominence of ribs, muscle wasting especially of large groups e.g. gluteals.
- Signs of poor hygiene.
- Flattened occiput.
- Developmental delay.
- Apathetic and withdrawn behaviour.
- Minimal smiling and decreased vocalisation.
- Infant rarely cries but is hyperirritable.
- Infant very watchful and alert.
- Infant dislikes being touched or held.
- Lack of stranger anxiety.
- Toddler may indiscriminately seek affection.
- Mild hepatomegaly.
- Hypertonia.
- Diminished muscle strength.
- Retention of tonic posturing.

Exclude organic disease - This requires a detailed history and examination. Laboratory investigations will add very little unless there are significant findings in the history and examination. Investigations that should be considered: urinalysis (pH, osmolality, cellular elements, glucose, ketones), urine culture, stool for ova and parasites, full blood count, erythrocyte sedimentation rate, serum urea, creatinine, electrolytes, calcium and phosphorus, total protein, albumin, and liver enzymes.

2 Plan for admission:

Children should be hospitalised for FTT when it persists despite maximisation of community support (community nurse, community dietician, social worker, whanau, church, etc.) or because characteristics of the child, care giver or family make such outpatient management inappropriate or place the child at risk of neglect or injury.

The three aims of hospitalisation of children with FTT are:

- To observe child's feeding behaviour and the mother-child interaction.
- To see whether the infant's weight gain returns to normal when s/he is removed from the family.
- To decide whether laboratory testing is indicated.

3 Planned feeding regimen:

Feeding regimen must be accurately charted and nutritional intake accurately recorded on a 24 hour fluid balance sheet. The majority of children with FTT will consume >130 kcal/kg/day. They should be offered a caloric intake 50% greater than required for normal growth by a child of the same height and of average weight. Average energy requirements are 110 kcal/kg/day for first 6 months, 100 kcal/kg/day for second 6 months and subsequently to age 2.

Severity of malnutrition can be determined by calculating the actual weight as a percentage of ideal weight for height. Normal is 90 – 110%.

Malnutrition:	Mild	=	85 to 90 % of ideal weight for actual height
	Moderate	=	75 to 85 percent
	Severe is	=	<75 percent

With non-organic FTT, consistent weight gain usually occurs within two weeks, occasionally it may take up to 3-4 weeks. Usually it will reach 50 g per day.

4 Planned multi-disciplinary involvement:

Consultation with the dietician will be helpful in determining severity of malnutrition, estimating caloric intake and ensuring appropriate, high calorie diet. FTT in the infant can be a symptom of much broader dysfunction affecting the family. Assessment of the family will require consultation with the community agencies listed above. During hospitalisation, assessment of the mother's and the family's emotional and psychiatric health may be necessary. The Child and Family Unit should be consulted. Social work involvement may be required. Input from other disciplines, such as kai tiaki, lactation specialists, speech therapy and developmental therapy will be helpful in some situations.

5 Documentation of weight gain:

Weight, length, head circumference and weight-for-height should be plotted on admission. The infant should be weighed daily and this weight recorded on daily weight plot. All parameters should be documented again prior to discharge.

6 Plan for discharge and follow up:

Multi-disciplinary community management is required if child not admitted plan follow up with community nurse ± dietician, GP, and CED or outpatient clinic.

If admitted multidisciplinary community co-ordination with discharge planning nurse essential. Ensure communication and follow-up between all hospital staff and related community agencies has occurred.

e.g. Medical staff ↔ general practitioner.
Hospital ↔ community nursing.
Occupational therapy ↔ visiting developmental therapy.
Kai tiaki ↔ community Maori health services.

7 Prognosis:

There is an increased risk of continued growth retardation. Many children remain small. Furthermore, severely impaired growth during the first six months of life (controlling for SES and iron deficiency) is associated with impaired mental and psychomotor development during the second year. The earlier the onset and the greater its severity the worse the outcome. Whether or not these changes persist, and how much this persistence is due to adverse social circumstances is still uncertain.