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## Assessing for faltering growth in children.

### Abstract

*Childhood is a time of significant velocity in growth. Growth predicts health and well-being and currently acts as one of the most valued measures of how a child is developing. When growth fails to occur at a time and rate that is expected, children are perceived to require additional support and interventions to help minimise the risk of malnutrition, dehydration and mortality. Faltering growth is often considered difficult to identify. Nurses both in community and hospital settings need to be equipped with skills to assess growth of infants and children, supporting early intervention strategies. This article explores the many aspects for consideration that can guide efficient faltering growth assessments.*

### Introduction

Childhood is a time of rapid growth and advances in development, with infancy (birth to two years) and puberty providing more velocity of growth than in any other stage of child or adult life. Growth in children is one of the most important characteristics of well-being. Optimal growth signifies adequate nutrition, health and development (Secker and Jeejeebhoy, 2007; O’Goulet, 2010; NICE, 2017). Growth refers to the height and weight of a child in relation to their chronological age.

When children fail to grow within expected ranges for their age over a period of time this is referred to as faltering growth (NICE, 2017, Ryan 2013 ;). NICE 2017, identify that for growth to be recognised as faltering from the normal ranges for that child, there needs to have been a failure in growth rate over a period of time that has resulted in a fall of at least two centiles on the WHO (2006) growth charts. The only exception being for children above the 90<sup>th</sup> centile where a fall of three centiles is required prior to a concern regarding faltering growth. Faltering growth is a direct result of less calorie intake / absorption than calorie expenditure (GOS 2018). Faltering growth is indicated through weight and height deficits over a period of time, usually months, or possibly weeks in infancy.

Any nurse who is presented with a child with growth concerns needs to feel confident in performing detailed assessments and recognising when referral and nutritional support are essential in minimising risk and the progression of faltering growth.

<b>Learning Outcomes</b>
▶ To understand the term faltering growth
▶ To recognise the difference between organic and non-organic causes of faltering growth
▶ To identify a what stage faltering growth is recognised in a child’s weight history
▶ To develop knowledge on the assessment process for faltering growth in children

### Nurses role

Suboptimal growth is multifaceted, it may be the only indicator of a pathological disorder (Lee et al 2018) however studies across Europe such as, Romano et al, 2015; Joosten and Meyer 2010, report that only around 6% of children affected by faltering growth are

diagnosed with physiological illness or disease, with the vast majority of cases being non organic in origin. Regardless of the mechanisms involved, faltering growth is known to induce inadequate nutritional status with a high risk of leading to impairment in brain and motor development, stunted growth, impact on social and emotional stability as well as increasing parental and child anxiety around feeding (Marino et al 2001).

Nurses who have contact with children in communities and hospitals are in a prime position to recognise where growth may be deviating from normal ranges, assess and implement strategies to support optimal feeding and nutrition in an attempt to reduce or halt faltering growth (Lee et al 2018, Singer et al 1990).

Assessment includes growth measurement, history taking, physical and social determinants alongside feeding diaries in order to ensure a comprehensive approach is performed. Red flags that could indicate organic pathogens need to be eliminated before management and preventative plans can be initiated.

Faltering growth can be a direct result of physiological conditions where a child is unable to feed or obtain full nutrition from their feeds. Disease and illness such as dysphagia, odynophagia, choking, recurrent pneumonia, pyloric stenosis, severe gastro oesophageal reflux, heart and lung abnormalities, cleft palate, neurological conditions (Lundeen et al 2014) can all contribute to a child being unable to feed with efficacy or maintain nutritional components of the feed. These children may first present with slow or faltering growth as their primary symptom. Thorough medical and social history taking can help establish organic pathologies and ensure that the child is referred to specialist services to support their individual need.

Non organic causes of faltering growth are often more difficult to identify. Assessment techniques that are comprehensive of feeding behaviours, patterns, family and social environmental factors are essential when striving towards successful management of a child's nutrition (McCann et al 1994, Lee et al 2018). Unsuitable feeding behaviour is identified as the cause of faltering growth in 40-50% of non-organic cases (Romano et al 2015; Joosten and Meyer 2010, Marino et al 2001).

Patterns of feeding where a child has not received optimal reciprocity of feeding cues, intrusive feeding due to parental anxiety over feeds, failure to progress feeding at the required times such as on to solid foods, prolonged or shortened meal times, abnormal feed patterns, often begin in early infancy and develop into food refusal or aversion. Provoking insufficient calorie intake therefore restricting growth (McDonald et al 2008).

<b>Organic feeding behaviours</b>	<b>Non organic feeding behaviours</b>
Vomiting	Food refusal
Choking	Anticipatory gagging
Breathless, Sweating	Food aversion
Diarrhoea	Abnormal feed routines
Feeding interrupted by crying	Missed feeding cues/responsiveness
Skin rashes	Parent/carer initiation of feeds

Feeding behaviours that result in a child’s aversion to certain foods and textures may be representative of autistic spectrum disorders or lack of exposure to certain foods. These behaviours often begin in late toddler stages and early childhood. This may cause alarm to parents as often the behaviours are seen as regression from normal feeding for this child. Assessments need to identify all areas of the child’s development in order to ensure the correct care plan is devised.

**Measurement of growth**

Poor gain in weight or height is the primary indicator of faltering growth. Measurement of growth in children is a vital skill and must be completed with precision and accuracy in order to ensure efficacy. WHO centile charts are the only approved international tool that accurately records weight, height and head circumference in infants and school age children. WHO have formulated charts for preterm babies, children under one year, children 1-5 years and those 5-18 years. The correct centile chart for male or female and age band must be used. WHO established that children from all origins grow at similar rates if they have the same opportunities for nutrition and social environments (O’Goulet 2010). Therefore these charts can be used across all cultures and have been commissioned for use in many developed countries.

NICE guidance 2017, advises that babies and infants under two years should be weighed naked and length obtained. Children over two years should not wear nappies, coats or shoes when having weight and height recorded.

Frequency of weighing should be guided by the clinical concern, however no more than weekly (NICE, 2017). Monthly providing the best measure in children over one year old. Length and height are not required any more than three monthly. It is recommended for children over two years that calculation of BMI be performed to establish a clear growth pattern. Where children are under the 0.4<sup>th</sup> centile, nutritional support should be considered at the outset. It can also be beneficial to calculate the mid parental centile if concerns over short stature are evident. Mid parental centile calculates the expected height of a child, considering the height of their biological parents.

**Assessing feeding**

In the assessment process for faltering growth a full detailed feeding history is essential. It’s important to establish how the child feeds, what behaviours are present, before during and after each feed/meal.

<b>Child behaviours</b>	<b>Parent /Carers behaviours</b>
Any crying? when does this happen	When are feeds offered?
Refusing or avoiding foods? What ones exactly	Do the family eat together?
Does the child self-feed and make a mess	What are the portion sizes
Are they fed when hungry?	Who feeds the child? Is it different for anyone
Are they distracted from the food?	What signs do the parents recognise for their child hunger?

Where are they sat when fed?	Do they encourage eating? is this more intrusive than normal ?
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It is recommended that observation of feeds should be completed alongside comprehensive feeding diaries. (NICE 2017, Romano et al 2015, Jarod et al 2018, Dinsmore et al 2011).

Food diaries allow the professional to establish what is being offered and the sizes of meals offered and consumed. Following this calorie and protein content of the foods consumed can be formulated. This helps in clarifying where any deficits may be present in a child's nutritional status.

Observing feeding behaviours and patterns in the child's natural environment (preferable), can help professionals establish feeding techniques and behaviours that can contribute to the assessment process and guide intervention. Some services advise that recording the feeding may be more beneficial in gathering an accurate picture, opposed to an unfamiliar professional observing, which may unsettle the child and enhance any anxiety provoked behaviours (King and Davis 2010).

### Management

Comprehensive assessments formulate the management strategy that will support individual child, young person and family in addressing faltering growth in community settings. In line with NICE (2017) guidance that all cases of non-organic faltering growth should be managed in community settings unless consideration of enteral feeding is deemed necessary.

### At a glance strategies for community intervention of non-organic faltering growth

Record minimum of one week food diary	Educate parents and carers on volume of feeds/portion sizes
Calculate protein and calorie intake	Observe feeding
Devise food plan to meet calorie/protein requirements for age of child or young person	Ensure non-intrusive feeding through information
Stipulate set and consistent feed times	Monitor timings of feeds and meals. Not too long or too rushed (20 minutes is a good guide for children over 6 months)
Encourage child/young person to self-feed if age appropriate	Measure weight and height 1-2 weekly if under 1 year 2-4 weekly over 1 year ( indicated by level of concern)
Encourage family meal times	Provide behavioural support to family to assist with promotion of positive feeding routines.

Consider nutritional supplements or fortified formulas for additional requirements	Monitor milk intake. Is a Limit required ?- to increase complementary feeding in children over 1 year
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(NICE 2017, WHO 2006,Ryan 2013).

### **Referring on to specialist services**

Within community provisions it can sometimes be necessary to consider further assessment and intervention from specialist services such as dietitians for nutritional support, speech and language therapy for any swallowing issues, occupational therapists' paediatricians to ensure there is no delay in treatment for organic origins. Marino et al (2001) support the role of social workers with cases of non-organic faltering growth. Their rationale being that social workers are highly skilled in establishing social patterns and lifestyle choices that may impact on feeding regimes. Extreme cases may also benefit from psychology interventions to address significant feeding behaviours (O'Brien 2004).

NICE 2017, advise that in all cases care in the community should be first line management. Hospital admission should only be considered when enteral feeding is required, when essential to avoid risk of malnutrition or dehydration.

Primary care providers are in a unique position to detect early onset on faltering growth and promote successful feeding behaviours (WHO 2006), implementing early strategies to minimise malnutrition and its associated mortality.

<b>CPD Questions</b>
▶ Can you define what faltering growth is and how this is established in a child over two years old?
▶ Have you cared for a child with faltering growth ? Can you reflect on how the assessment for origin was completed?
▶ How do you feel about exploring social history when assessing for faltering growth? Can you think of three questions you would ask as part of this process?
▶ What type of behaviours do you think would represent intrusive feeding ?
▶ What symptoms would you be concerned were organic origin when assessing for faltering growth ?

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