

June 11, 2009

## Failure to Thrive Treatment Protocol

### Clinical Question

- P (population/problem) Among pediatric patients with failure to thrive (FTT)  
I (intervention) does a specific protocol for treatment  
C (comparison) versus current practice  
O (outcome) result in sustained/appropriate growth?

### Target Population

Children with failure to thrive (FTT)

#### Definition of FTT used by the committee:

- Weight < 5<sup>th</sup> %ile for age  
**Note:** Using special growth charts when indicated (e.g. prematurity, Down Syndrome, Turner Syndrome)
- Weight for length < 5<sup>th</sup> %ile for age
- A rate of weight gain that is exhibited by a decrease in 2 major percentiles (90<sup>th</sup>, 75<sup>th</sup>, 50<sup>th</sup>, 25<sup>th</sup>, 10<sup>th</sup>, 5<sup>th</sup> %iles) 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

### Recommendations (See Table of Recommendation Strength following references)

#### It is strongly recommended that:

1. 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) be involved in the management of children with FTT (*Hobbs 1996 [5], Local Consensus [5]*).

**Note:** During the literature search for the development of this BESt statement, the committee contacted 12 large, academic, pediatric hospitals from across the country in regards to their policies and procedures for the management of FTT. Physicians from Boston Medical Center have developed a "Grow Clinic" composed of various healthcare providers to care for children with FTT, and mentioned success in their ventures. They did note, however, that funding for these services was a constant challenge.

#### It is recommended that:

2. 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 in these patients (*Fryer 1988 [1a]*).
3. an institution 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 (*Local Consensus [5]*).

**There is insufficient evidence and lack of consensus to make a recommendation for:**

4. ● the inpatient management of FTT, including criteria for when discharge is appropriate for these children; or
- the outpatient management for FTT, including intensive management with the use of a specialist health visitor.

**Note:** Outcomes in regards to growth, both short- and long-term, varied amongst studies (*Black 2007 [2a]*, *Raynor 1999 [2a]*, *Black 1995 [2a]*, *Wright 1998 [2b]*, *Hutcheson 1997 [2b]*).

**Relevant Cincinnati Children’s Hospital Medical Center (CCHMC) Policies and Procedures**

- V-311 Failure to Thrive (FTT) (Organic and Non-organic) 2/26/2009
- FTT – Social Services Policies and Procedures 2/24/2004

**Discussion/summary of evidence**

Failure to thrive (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. Within our own institution and community, treatment protocols for FTT vary immensely between healthcare providers. This variation and lack of consensus led our group to a systematic literature search to determine if there was evidence to support a specific protocol for management, versus our current practice, that would result in improvement in the sustained growth of children with FTT.

We identified only one study in our literature review that focused on the efficacy of hospitalization for nonorganic 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 [1a]*). This study concluded that hospitalization favorably influenced the growth of infants and 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 of this meta-analysis 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 refeeding syndrome) or in complicated social situations, the cost to the healthcare system for inpatient admission may outweigh the long-term benefits.

Our literature search identified five studies that focused on various intensive outpatient management protocols and their effect on the growth and psychosocial development of children with FTT. A summary of the studies is compiled in the Table.

Given the various outcomes studied in regards growth, development, and parent/child interaction when home intervention is utilized for the outpatient management of FTT, the committee was unable to recommend for or against this type of program. The committee does support the idea of further research in this area in regards to both short and long term outcomes, as well as the financial impact to the health care system.

**Table: Interventions and Outcomes for Children with Failure to Thrive**

Study	Interventions/Type of Study	Outcomes
<i>(Black 1995 [2a])</i>	Evaluated the efficacy of a one year home intervention protocol in children with FTT.  Randomized Controlled Trial	<ul style="list-style-type: none"> <li>▪ One year following intervention, <b>no significant improvement</b> in weight for age, height for age, or weight for height was noted in the intervention group as compared to the control group.</li> <li>▪ Children with FTT in the home intervention group also experienced <b>less of a decline</b> in cognitive development and receptive language, and were noted to have a higher interactive competence, were living in more “child centered” homes, and their parents were more in control of parent-child interactions over time than those in the control group.</li> </ul>
<i>(Black 2007 [2a])</i>	Evaluated the efficacy of a one year home intervention protocol in children with FTT.  Randomized Controlled Trial	<ul style="list-style-type: none"> <li>▪ Eight years following the intervention, children in the intervention group had <b>no improvement</b> in IQ, reading scores, or mother reported behavior problems as compared to controls.</li> <li>▪ However, those in the intervention group had <b>fewer</b> teacher-reported internalizing problems and <b>better</b> work habits than those in the control group.</li> </ul>

Study	Interventions/Type of Study	Outcomes
(Hutcheson 1997 [2b])	Evaluated the 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	<ul style="list-style-type: none"> <li>Among families with a lower socioeconomic status what had children with FTT, home intervention was <b>most useful</b> in among mothers with a low negative affectivity.</li> </ul>
(Raynor 1999 [2a])	Evaluated the effectiveness of home intervention with a trained health visitor in children with FTT.  Randomized Control Trial	<ul style="list-style-type: none"> <li>Both children in the intervention and control groups exhibited improved weight gain, developmental scores, and energy intake.</li> <li>Children in the control group had significantly more dietary referrals, social service involvement, hospital admissions, and less compliance with physician appointments.</li> </ul>
(Wright 1998 [2b])	Evaluated the efficacy of a home intervention specialist in children with FTT.  Randomized Controlled Trial	<ul style="list-style-type: none"> <li>In children under the age of two, <b>76%</b> of those children who received a home intervention specialist <b>had recovered</b> from their diagnosis of FTT at the time of follow-up, while only <b>55%</b> of those in the control group had recovered.</li> </ul>

## References

- Black, M. M.; Dubowitz, H.; Hutcheson, J.; Berenson-Howard, J.; and Starr, R. H.: A randomized clinical trial of home intervention for children with failure to thrive. *Pediatrics*, 95(6): 807-814, 1995, [2a] \_\_\_\_\_ ↗ \_\_\_\_\_.
- Black, M. M.; Dubowitz, H.; Krishnakumar, A.; and Starr, R. H., Jr.: Early intervention and recovery among children with failure to thrive: follow-up at age 8. *Pediatrics*, 120(1): 59-69, 2007, [2a] \_\_\_\_\_ ↗ \_\_\_\_\_.
- Fryer, G. E., Jr.: The efficacy of hospitalization of nonorganic failure-to-thrive children: a meta-analysis. *Child abuse & neglect*, 12(3): 375-381, 1988, [1a] \_\_\_\_\_ ↗ \_\_\_\_\_.
- Hobbs, C., and Hanks, H. G.: A Multidisciplinary Approach to the Treatment of Children with Failure to Thrive. *Child: care, health, and development*, 22 (4): 273-284, 1996, [5] \_\_\_\_\_ ↗ \_\_\_\_\_.
- Hutcheson, J. J.; Black, M. M.; Talley, M.; Dubowitz, H.; Howard, J. B.; Starr, R. H., Jr.; and Thompson, B. S.: Risk status and home intervention among children with failure-to-thrive: follow-up at age 4. *Journal of pediatric psychology*, 22(5): 651-668, 1997, [2b] \_\_\_\_\_ ↗ \_\_\_\_\_.
- Local Consensus: During BEST development timeframe. [5] ↗.
- Raynor, P.; Rudolf, M. C.; Cooper, K.; Marchant, P.; and Cottrell, D.: A randomised controlled trial of specialist health visitor intervention for failure to thrive. *Archives of Disease in Childhood*, 80(6): 500-506, 1999, [2a] \_\_\_\_\_ ↗ \_\_\_\_\_.
- Wright, C. M.; Callum, J.; Birks, E.; and Jarvis, S.: Effect of community based management in failure to thrive: randomised controlled trial. *BMJ (Clinical research ed.)*, 317(7158): 571-574, 1998, [2b] \_\_\_\_\_ ↗ \_\_\_\_\_.

## Grade of the body of evidence: Moderate

\*\*Additional references reviewed by the committee that were not cited in this BEST and a list of the pediatric institutions contacted in regards to their policies and procedures for the management of FTT are available upon request\*\*

Note: Full tables of evidence grading system available in separate document:

- [Table of Evidence Levels of Individual Studies by Domain, Study Design, & Quality](#) (abbreviated table below)
- [Grading a Body of Evidence to Answer a Clinical Question](#)
- [Judging the Strength of a Recommendation](#) (abbreviated table below)

**Table of Evidence Levels** (see note above)

Quality level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

**Table of Recommendation Strength** (see note above)

<i>Strength</i>	<i>Definition</i>
“Strongly recommended”	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
“Recommended”	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.

**Dimensions:** In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.

1. Grade of the Body of Evidence (see note above)
2. Safety / Harm
3. Health benefit to patient (*direct benefit*)
4. Burden to patient of adherence to recommendation (*cost, hassle, discomfort, pain, motivation, ability to adhere, time*)
5. Cost-effectiveness to healthcare system (*balance of cost / savings of resources, staff time, and supplies based on published studies or onsite analysis*)
6. Directness (*the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]*)
7. Impact on morbidity/mortality or quality of life

**Supporting information**

**Introductory/Background Information**

**Driving forces behind the development of this committee focusing on the care of children with FTT at CCHMC:**

- frustration of the High-Risk Continuity of Care Committee with current management strategies for FTT that appeared to do very little to improve a child’s risk status.
- inconsistencies in the management of children experiencing failure to thrive.
- the need for policy review and revisions that incorporate evidence-based care for children with FTT.

**Local FTT Statistics**

During the development of this BESt the committee wanted to determine the prevalence of FTT in both inpatients and outpatients at CCHMC. An inquiry of billing was undertaken for the diagnoses of FTT, abnormal weight loss, and weight loss, for the calendar year of 2008 for the Generalist Inpatient Service (the major inpatient hospitalist teaching service at the institution) and the large, on-site pediatric primary care clinic at the institution. This did not include private pediatrician admissions, community pediatric practices, or the other free-standing primary care clinics associated with the institution.

**Inpatient Statistics during 2008**

<b>Diagnoses</b>	<b>Number of Patients</b>
Failure to Thrive (ICD9 Code 783.41)	126
Loss of Weight or Abnormal Weight Loss (ICD9 Codes 783.21 and 783.22)	44

**Outpatient Statistics during 2008**

<b>Diagnoses</b>	<b>Number of Patients</b>
Failure to Thrive (ICD9 Code 783.41)	73
Loss of Weight or Abnormal Weight Loss (ICD9 Codes 783.21 and 783.22)	34

**Group/Team Members**

**Group Leaders:**

**CO-Chairs**

Judy Wood, LSW, Social Worker II, Division of Social Work  
 Jennifer O’Toole, MD, Instructor, Division of General and Community Pediatrics

**Other group/team members:**

Amanda Barrett MD, Staff Physician, Formerly of the Division of General and Community Pediatrics  
 Ann Brandner MSW, LISW, Division of Social Services  
 Kathy Gosney, LISW-S, SWII, Division of Social Services

Katie Kerrey, MD, Staff Physician, Division of General and Community Pediatrics  
Stacey Litman-Padnos, LISW-S, SW, Division of Social Services  
Kathy McGee, MSN, CNP, Pediatric Nurse Practitioner Pulmonary Medicine  
Formerly: Pediatric Nurse Practitioner for Aerodigestive/Feeding Team  
Melissa Montgomery, LISW-S, Clinical Manager, Division of Social Services  
Kelli Rakel, MS, RDII, LD, Division of Nutrition Therapy

**Support personnel:**

Karen Burkett, MS, CNP, Division of Developmental and Behavioral Pediatrics,  
Formerly: EBP Mentor, Center for Professional Excellence, Research & EBP  
Susan McGee, MSN, CNP, EBP Mentor, Center for Professional Excellence, Research & EBP, Division of Patient Services

## Search Strategy

**Databases:** Ovid MEDLINE ® and Cinahl ® <1988 to April 2008>

**Major subject heading:** Failure to Thrive

**Subheading:** Therapy

**Limits:** English language and children ages 0 to 18 years

## Applicability Issues/Avenues for Future Research

It is critical that any implementation of our recommendations be put into place in such a manner that data and outcome measures can be obtained. Research into these areas is crucial to decrease variation among clinicians and determine if patient outcomes will be improved. Our committee proposes research in the following areas, with the ability to assess outcomes and financial effects on the healthcare system:

- Development of an outpatient and inpatient protocol for the management of FTT
- Development of a “Grow Team” to streamline the care of children with FTT
- Home health visitors and intensive outpatient management/follow-up for FTT

Collaboration between the many departments and medical professionals caring for patients with FTT would need to occur in order to prevent duplication of services within the hospital and allow a consistent approach to all patients with these diagnoses.

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Copies of this Best Evidence Statement (BESt) are available online and may be distributed by any organization for the global purpose of improving child health outcomes. Website address: <http://www.cincinnatichildrens.org/svc/alpha/h/health-policy/ev-based/default.htm>

Examples of approved uses of the BESt include the following:

- copies may be provided to anyone involved in the organization’s process for developing and implementing evidence based care;
- hyperlinks to the CCHMC website may be placed on the organization’s website;
- the BESt may be adopted or adapted for use within the organization, provided that CCHMC receives appropriate attribution on all written or electronic documents; and
- copies may be provided to patients and the clinicians who manage their care.

Notification of CCHMC at [HPCEInfo@cchmc.org](mailto:HPCEInfo@cchmc.org) for any BESt adopted, adapted, implemented or hyperlinked by the organization is appreciated.

For more information about this CCHMC Best Evidence Statement and the development process, contact Judy Wood, LSW at (513)636-3446 or [judy.wood@cchmc.org](mailto:judy.wood@cchmc.org).

## Note

**This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.**

**Reviewed by** Clinical Effectiveness