

Inpatient Nutrition Management Of Faltering Growth For A Medically Complex Child

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BACKGROUND

Faltering growth, also known as failure to thrive, is a term used to describe infants or children who are not achieving adequate growth patterns. There are many possible etiologies for faltering growth (FG) and nutrition is an important intervention in all presentations.

While outpatient management of FG is typically sufficient, inpatient hospitalization is occasionally required, particularly when outpatient feeding plans have failed to achieve adequate growth.

Assessment:

23-month-old M, PMHx includes: infantile spasms, global developmental delay, hypertonia, poor weight gain, microcephaly, feeding difficulties, constipation with associated emesis, noisy breathing.

Nutrition Diagnoses:

- Inadequate oral food/beverage intake related to limited food acceptance and tolerance of foods and fluid as evidenced by diet recall, constipation, faltering growth.
- Chronic moderate malnutrition related to poor PO intake as evidenced by weight gain velocity of 2.85g/day since July 2020, < 50% of norm.

Nutrition Requirements:

Calories: 100-110 kcal/kg (accounting for catch-up growth); Protein: 1.5g/kg; Fluid: 100 mL/kg

Initial Nutrition Intervention:

4 cans PediaSure 4x per day (240mL x 4) + home diet as tolerated. Provides: 98 kcal/kg, 2.9g protein, and 98 mL/kg fluids

Goals:

Receive 100% of nutrition needs from PO intake

Achieve 8-20g/day of catch-up growth, and age-appropriate linear length gain of -.7-1.1 cm/mo

NUTRITION-FOCUSED CLINICAL COURSE

Presented as planned admit to Seattle Children's Hospital (SCH) to evaluate FG, feeding difficulties and coordination of care.

HD 1: Bedside swallow completed by SLP, concerning for descending aspiration, VFSS recommended. Initial nutrition assessment and recommendations provided.

HD 3: VFSS notable for oropharyngeal dysphagia, deep laryngeal penetration, and silent microaspirations; swallow safety enhanced with ½ nectar thick liquids.

HD 6: Nutrition reassessment, formula change to Boost Kids Essentials 1.5 w/ Fiber given low avg. weight gain velocity (8g/day); Upper GI study normal.

HD 7: Formula switched back to PediaSure. Weight gain velocity during admission ≈ 18g/day. Discharge, w/ potential for readmission for feeding tube placement pending growth outcomes.

Consulting Services: Genetics (recommended outpatient f/u), Rehabilitation medicine (recommended baclofen, not started), ophthalmology, PT/OT, speech language pathology, nutrition.

OUTPATIENT D9: Taking 3.5 bottle of PediaSure, lost 220g, continued constipation.

OUTPATIENT D19: At goal feeds, weight gain velocity of 11.25 g/day x 12 days, accepting home bowel regimen. Remained below discharge weight.

GROWTH CHARTS

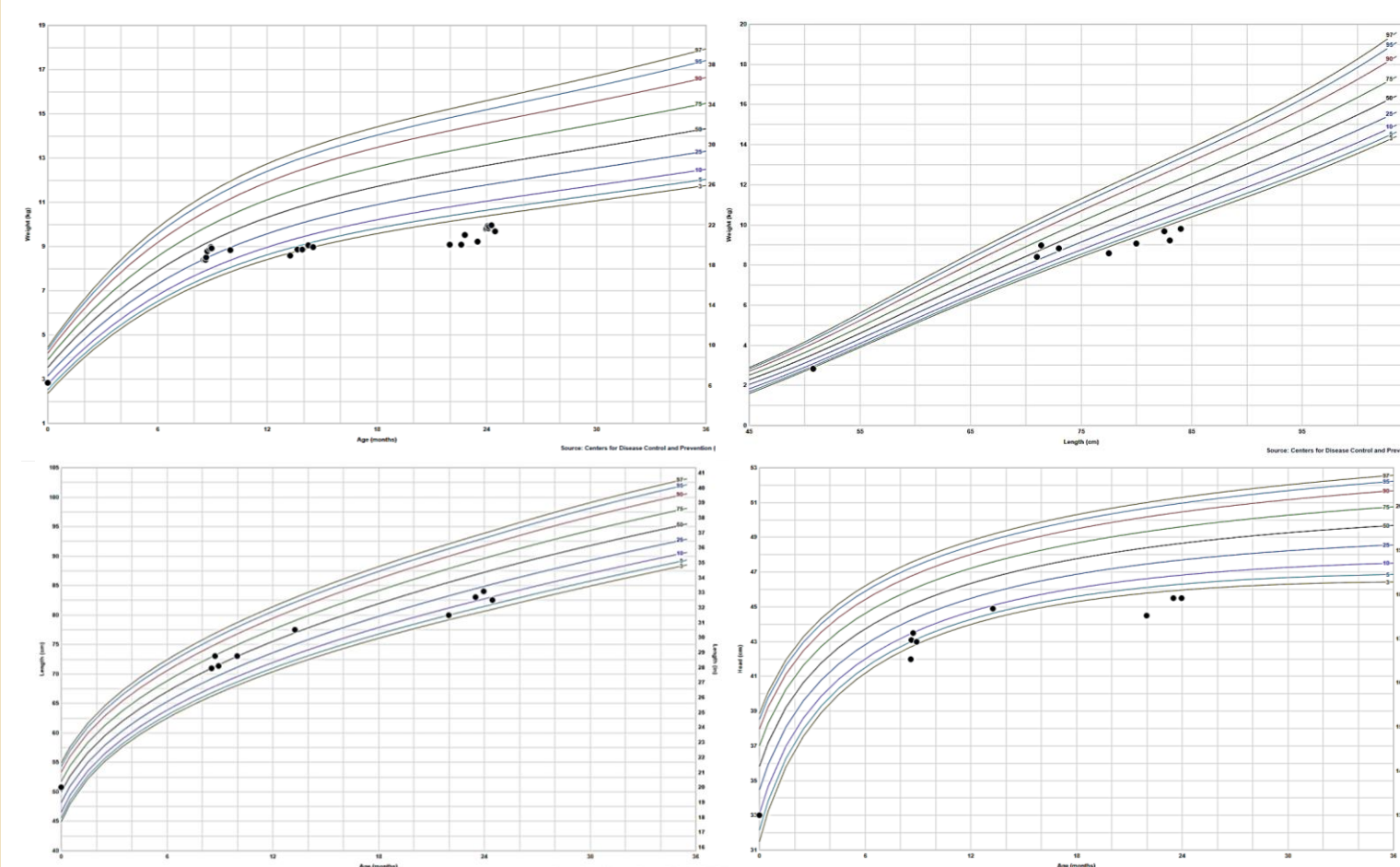


Figure 1. CDC Growth Charts for Boys ages 0-36 months. Upper Left: Weight-for-age. Upper Right: Weight-for-length. Lower left: Length. Lower right: OFC. The above charts are not corrected for gestational age, though there are no significant difference in trend between corrected/uncorrected.

SCH FG PATHWAY

Inclusion Criteria

- Age < 1 year
- Meet criteria for FG:
 - Weight < 2nd percentile
 - Weight for length < 10th percentile
 - Fall across 2 weight percentile lines

Exclusion Criteria

- Known medical diagnosis causing FG (CF, CSD, etc.)
- Ill appearing (hemodynamic instability, AMS, etc.)
- Prior admission for FG

Admit Criteria

- Concern for underlying disorder requiring urgent workup (CHF, inborn error of metabolism)
- Failure to respond to outpatient feeding plan
- Severe malnutrition
- Suspected neglect/abuse

Discharge Criteria

- Weight gain on current feeding plan
- Additional workup complete
- Teaching complete
- Follow up arranged with planned twice weekly weight checks

Summary of Available Goals for FG

Nutrition Interventions:

- Treat underlying disease process¹
- Goal weight gain of 2-3x average growth for age² (OR) goal weight gain of 10-20g per day³
- Provision of 150% of recommended daily energy needs⁴ (AND) 8.9-11.5% kcals from protein³

CASE DISCUSSION

- Home diet was limited to PediaSure mixed with Gerber Baby Oats cereal and included 7 feeding times per 24 hrs. Was meeting ~75% of energy and 55% of fluid needs.
- Nutrition intervention aimed at increasing kcal provision by increasing PediaSure intake aligned with literature; growth goals aligned with literature; protein provision was a secondary goal to kcals.
- Potential nutrition interventions not pursued: gastric emptying study, trial of prokinetic agent (e.g., erythromycin)
- Social work was only minimally involved in case and could have provided more focused assessment and support.⁵

CONCLUSION

Nutrition management of this child was in line with current guidelines available in the literature. SCH could strengthen their care of children with FG by implementing the following changes to their pathway:

- Expand inclusion criteria to age ≤ 2 years
- Include clear growth goals in discharge criteria

Sources:

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6. Seattle Children's Hospital, Warner-Grant J, Coy G, et al. Faltering Growth Pathway. 2018. <http://www.seattlechildrens.org/pdf/faltering-growth-pathway.pdf>.