Pediatric Malnutrition
Hospital-wide documentation improvement

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Objectives
After this presentation, the attendee will be able to:

• Define Pediatric Malnutrition
• Understand the benefit of diagnosing malnutrition to patient outcomes
• Develop and implement a process to identify and document malnutrition in their practice setting

Idea for project

• Various Listservs
• Adult hospital QI project webinars
• ASPEN/AND Etiology-Related definitions for Pediatric Malnutrition
Is there a problem?
- Review of patient measurements/z-scores

Who do we need on the bus?

Team Formation
- Who were the stakeholders?
- Who did we need?

Purpose Statement
To improve the process of identifying and documenting malnutrition and related comorbidities to improve patient safety/outcomes and increase revenue through proper coding/billing.
**Business Case**

- Increased documentation of malnutrition:
  - Improves patient outcomes in several key areas including:
    - decreased hospital acquired infections;
    - decreased fall risk;
    - decreased hospital acquired wounds
    - improved wound healing.
  - Increases revenue through an increased case mix index.

**Problem Statement**

- Underdiagnosing malnutrition
  - < 1% diagnosed at ACH
  - National data: 25-35%

**Work Group Goals**

**PRIMARY**: Improve patient outcomes
- decrease hospital acquired infections & wounds
- improve wound healing
- decrease fall risk
- decrease readmission rate

**SECONDARY**: Increase revenue by increasing the case mix index.

**Pediatric Malnutrition Defined**
Pediatric Malnutrition

- An imbalance between nutrient requirements and intake
  - Deficits of energy, protein, or micronutrients
  - Negatively affecting growth and development
  - Non-illness related
  - Illness related

Figure 1. Defining malnutrition in hospitalized children: Key concepts.

Table 1. Practical Scheme for Pediatric Malnutrition Definition.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Treatment</th>
<th>Equipment</th>
<th>Prevention</th>
<th>Prognosis</th>
<th>Evaluation</th>
<th>Monitoring</th>
<th>Testing</th>
<th>Assessment</th>
<th>Management</th>
</tr>
</thead>
<tbody>
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Mehta NM et al. JPEN J Parenter Enteral Nutr 2013;37:460-481
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Anthropometrics
- Weight
- Length/Height
- Mid-upper Arm circumference (MUAC)
- Triceps skin fold (TSF)
- Mid-arm muscle circumference (MAMC)
- Z-scores

Growth
- Dynamic changes
- Weight
- Length/Height
- Declining z-score

Why use z-scores?
- Extreme values

Mechanism
- Starvation or decreased nutrient intake
  - Anorexia nervosa
  - Anorexia due to illness
  - Food deprivation due to poor socioeconomic status or neglect
- Malabsorption/nutrient loss
  - Diarrhea
  - Vomiting
- Hypermetabolism or increased energy requirement
  - Chronic disease
- Altered utilization of nutrients secondary to inflammation
  - Fever

Outcomes
“Screening for malnutrition on admission or at the beginning of an illness allows assessment of current nutrition status and facilitates early detection of subsequent nutrition deterioration related to the illness.”
**Early Intervention Reduces the Mental Disadvantage of Stunting**

![Graph showing the effect of early intervention on development scores over time, with groups classified as non-stunted, supplemented, and stimulated compared to control.](image)

**Rollout**
- Adolescent Unit
- Infant Toddler Unit (ITU)

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**Education needed**
- Dietitian education & professional development
- Coder
- Physician
- Nurse

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**Physical Assessment Training**

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Physical Assessment

- Micronutrient deficiencies
- Fat loss
- Muscle wasting
- Edema

Malnutrition Diagnosis for Peds
(> 3 months to < 20 years of age)

BMI or Wt/Lt (if < 2 yrs) Z-score (found on Health Point growth chart)
- Mild or at risk (-1) to (-1.99)
- Moderate (-2) to (-2.99)
- Severe <(-3)

Chronic > 3 months
With Stunting: Ht or Lt Z-score <(-2)

Measurement Issues:
- Malnu-what?
- Measurement issues
- Fluid variances
- Risk of over-diagnosing
- Finding z-scores
Answers to Arguments

Malnutrition
- Malnutrition
- Malnutrition

BMI or WHtR Z Score: -1.18
(>3 months to <20 years of age)

Malnutrition: Yes
Malnutrition Score: Mild or at Risk (-1.1< to -1.99)

2-20 Z-score Calculator

Pediatric Z-Score Calculator

Instructions:
This web page allows you to calculate the body mass index (BMI) of your patients between the ages of 0 and 20 years. To use the calculator, enter the patient's weight and height. The BMI will be computed and displayed for you. In the BMI range of 15 to 30, the BMI is not considered to be high or low. The BMI of 0.0 to 15 indicates underweight, and the BMI of 30.0 and over indicates obesity.

0-24 month z-score calculator

PediTools
Clinical tools for pediatric providers

Growth from 0 to 24 months

11-27 months, male
Length: 67.5
BMI: 15.0
BMI z-score: -1.0

WHO Growth Standard for 0 to 24 months:
Uses the 2006 WHO growth references for children aged 0 to 24 months. The new standards reflect new data on growth from the WHO Multicentre Growth Reference Study. The figures are based on growth charts from several countries with different cultural and economic conditions. The charts show all the weight for height and the 25th, 50th, and 75th percentiles are the same. The charts are based on the latest WHO growth charts for children aged 0 to 24 months.

Malnutrition Diagnosis

Malnutrition diagnosis is not based on a single examination of the patient, the physician and the hospital.

Malnutrition Diagnosis Benefits:
- Better patient outcomes
- Improved cost-effectiveness
- Structural health outcomes (% CVD & all-cause mortality)
- Better post-discharge care

For more information contact us at: PediTools@_childrens-hospital.org
Lessons learned
- Complexity
- Data
- People
- Surprises
- Interest level

What is next
- Roll out to outpatient areas
- Continue to monitor compliance

Improved Documentation
- INCREASED 119%
On the horizon...

- Malnutrition of Obesity
- Documentation of other nutrition-related diagnoses

References

- Johnson, J. Coding for Malnutrition-A Success Story. Webinar provided by WVU Healthcare.

References (cont.)