Key Concepts of Pediatric Nutrition
PEDDIATRIC NUTRITION ASSESSMENT

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Objectives

• The participant will identify at least 2 unique elements of pediatric nutritional therapy

• The participant will form an entry-level treatment plan utilizing pediatric specific components
Goals of Nutrition Management

- Normal growth and development
- Promote healing and immunity
- Decrease time on a ventilator
- Decrease length of stay
Value Of Maternal/Pediatric Nutrition

PREVENTION OF DISABILITIES

TREATMENT OF CHRONIC ILLNESSES/DX

SUPPORTIVE or ADJUNTIVE CARE

MAXIMIZE POTENTIAL FOR BOTH PHYSICAL AND COGNITIVE DEVELOPMENT
Basic Components Of The Nutritional Assessment

- PERSONAL MEDICAL AND SOCIAL HISTORY
- FOOD AND NUTRITION RELATED HISTORY
- ANTHROPOMETRIC ASSESSMENT
- PHYSICAL ASSESSMENT
- BIOCHEMICAL ASSESSMENT
- FEEDING & BEHAVIORAL ASSESSMENT
Food And Nutrition Related Hx

• ADMINISTRATION ROUTE
  – oral, g-tube, j-tube, ng, pn
• DIETARY INTAKE
  – 24-hour, 3-day diet record, or food frequency
• FOOD HABITS
  – family meal patterns
  – purchasing/preparation
  – eating out
  – food/texture refusals
• PHYSICAL ACTIVITY
• VITAMIN/MINERALS/HERBS
• MEDICATIONS
## Biochemical Assessment

<table>
<thead>
<tr>
<th>Category</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHEM 14</strong></td>
<td>• Lytes, Renal and Liver labs</td>
</tr>
<tr>
<td></td>
<td>• HgbA1C, prn</td>
</tr>
<tr>
<td><strong>COMPLETE BLOOD CELL COUNT</strong></td>
<td>• Hemoglobin, Hematocrit, MCV, MCH</td>
</tr>
<tr>
<td></td>
<td>• Iron studies</td>
</tr>
<tr>
<td><strong>PERTINENT VITAMINS</strong></td>
<td>• D, A, E</td>
</tr>
<tr>
<td><strong>PERTINENT MINERALS</strong></td>
<td>• Cu, Zn, Se</td>
</tr>
<tr>
<td><strong>ACUTE PHASE REACTANTS</strong></td>
<td>• C-reactive Protein</td>
</tr>
<tr>
<td></td>
<td>• Albumin (very affected by fluid)</td>
</tr>
<tr>
<td></td>
<td>• Prealbumin</td>
</tr>
</tbody>
</table>
Anthropometric Assessment (primary)

<table>
<thead>
<tr>
<th>Weight for Age:</th>
<th>Height/Length for Age:</th>
<th>Head Circumference for Age</th>
<th>Weight for Height</th>
<th>BMI for Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Scale</td>
<td>Recumbent Length</td>
<td>WHO growth chart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• up to 30 lbs</td>
<td>• 0-2 Years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 0-2 Years</td>
<td>• WHO growth chart</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Standing Scale</td>
<td>Standing Height</td>
<td>WHO growth chart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• &gt; 2 years</td>
<td>• &gt; 2 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• CDC growth chart</td>
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<tr>
<td>• CDC growth chart</td>
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</tbody>
</table>
Anthropometric Assessment (secondary)

- MIDARM CIRCUMFERENCE (0.1 cm)
- TRICEPS SKINFOLD (0.02 mm)
- SUBSCAPULAR SKINFOLD (0.02 mm)
- CALCULATED ARM MUSCLE AREA (mm$^2$)
Growth History

- **WEIGHT & HEIGHT HISTORY:**
  - collect & plot on a growth chart
  - standards for wt and growth expectations

- **DIAGNOSIS-SPECIFIC GROWTH CHARTS**
  - down syndrome
  - turner syndrome
  - prader-willi syndrome
  - preterm growth charts: Fenton and Olsen
# Alternative Methods to Measure Height

## ARM SPAN:
- *should* equal height

## ARM LENGTH:
- Multiply by a factor to *estimate* height

## SITTING HEIGHT:
- Reference chart, *starts at age 2 years*

## KNEE HEIGHT: CHART *ESTIMATES WITHIN 2 INCHES*
- *starts at age 6 yrs*

## SEGMENTAL HEIGHT/LENGTH:
- An estimate

## ULNA LENGTH
- Linear Regression Analysis Equation
- Starts at 5 years
Feeding Assessment

- OBSERVE FEEDING/EATING
- COMPARE TO NORMAL MILESTONES OF FEEDING
  - sucking ability
  - chewing ability
  - method of feeding
  - body position during feeding
  - gagging, choking, coughing
  - drooling
  - time required to feed
  - consistency of foods tolerated
  - food refusal/disruptive mealtime behaviors
Clinical Signs

- Abnormal Skin or Hair
- Recurrent Infections
- Endurance
- Musculature
- Dental Status
- Food Intolerances/Allergies
- Irritability
Intake vs. Needs

- **ENERGY:**
  - **Estimated Energy Requirement**
    - Age and Gender dependent
    - Often overestimates energy needs in ill children
  - **WHO equation or Schofield for BMR**
    - Ideal for critically ill children
  - **Kcal/kg OF PRESENT WEIGHT**
    - best used for the child whose weight is appropriate
  - **Kcal/cm**
    - short stature children (<3rd percentile)
  - **CONSIDER:**
    - Physical activity, pubescence, catch-up needs, metabolic rate, disease state
Intake vs. Needs

- **PROTEIN**
  - **Gm/kg:**
    - AGE-DEPENDENT
  - **CONSIDER:**
    - INFECTIONS, TRAUMA, BURNS, ACTIVITY, ENERGY INTAKE, DISEASE STATE, CATCH-UP GROWTH

- **FLUID NEEDS: DETERMINED BY WEIGHT**
  - **Holliday-Segar**
    - 100 ml/kg (1-10 kg) + 50 ml/kg (2-20) + 20 ml/kg thereafter
  - BSA

- RDAs/RDIs
Developing a Nutrition Care Plan

- Assess and integrate results of the five components
- Collaborate with other members of the health care team
- Integrate information from parents/caregivers/teachers
- Identify medical nutrition therapy diagnosis
  - use PES statement
- Make necessary referrals
Summary

- **Pediatric nutrition assessment** is an essential process to determine appropriate interventions and follow-up required to ensure proper growth and development.
- Different requirements exist from infancy to adolescence.
- Infants require the highest number of calories per kg of weight than any other time in human development.
- Adult nutrition management does not translate to the pediatric nutrition management >> new skill set.
- Essential components of a nutrition assessment also include a pediatric nutrition-focused physical exam.