In the first year, an infant’s birth weight may triple, but over the following several years, the rate of weight gain gradually diminishes.

Body Shape of One-Year-Old and Two-Year-Old Compared

The body shape of a one-year-old (left) changes dramatically by age two (right). The two-year-old has lost much of the baby fat; the muscles (especially in the back, buttocks, and legs) have firmed and strengthened; and the leg bones have lengthened.

Sample Meal Plan for a One-Year-Old

<table>
<thead>
<tr>
<th>Sample Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intake about 800 cal/day</strong></td>
</tr>
<tr>
<td><strong>Breakfast</strong></td>
</tr>
<tr>
<td>¼ c iron-fortified breakfast cereal</td>
</tr>
<tr>
<td>¼ c whole milk (with cereal)</td>
</tr>
<tr>
<td>¼ c orange juice</td>
</tr>
<tr>
<td><strong>Morning snack</strong></td>
</tr>
<tr>
<td>1 to 2 oz cheese cubes</td>
</tr>
<tr>
<td>Teething crackers</td>
</tr>
<tr>
<td>¼ c vitamin C-fortified fruit juice</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
</tr>
<tr>
<td>½ sandwich: 1 slice bread with 2 lbs tuna salad or egg salad</td>
</tr>
<tr>
<td>¼ c vegetables¹ (steamed carrots)</td>
</tr>
<tr>
<td>1 c whole milk</td>
</tr>
<tr>
<td><strong>Afternoon snack</strong></td>
</tr>
<tr>
<td>1 slice toast</td>
</tr>
<tr>
<td>1 to 2 lbs apple butter</td>
</tr>
<tr>
<td>¼ c milk</td>
</tr>
<tr>
<td><strong>Dinner</strong></td>
</tr>
<tr>
<td>2 to 3 oz chopped meat or well-cooked mashed legumes</td>
</tr>
<tr>
<td>¼ c potato, rice, or pasta</td>
</tr>
<tr>
<td>¼ c vegetables² (chopped broccoli)</td>
</tr>
<tr>
<td>¼ c fruit³ (sliced strawberries)</td>
</tr>
<tr>
<td>1 c whole milk</td>
</tr>
</tbody>
</table>

Breast feeding is recommended until age 2

¹Include dark green, leafy and deep yellow vegetables.
²Include citrus fruits, melons, and berries.
**Transition to Childhood**

- Appetite decreases with slowing of growth
- Appetite changes with growth spurts
- Calorie requirements change with size and activity of individual
- Obesity is possible

**Food Guide Pyramid for Young Children**

- Four- to six-year-olds can eat these serving sizes.
- Offer two- to three-year-olds less, except for milk.
- Two- to six-year-old children need a total of 2 servings from the milk group each day.

**What Counts as a Serving**

### GRAIN GROUP
- 1 slice bread
- 1/2 c cooked rice or pasta
- 1/2 c cooked cereal
- 1 oz ready-to-eat cereal

### MILK GROUP
- 1 c milk or yogurt
- 2 oz cheese

### MEAT GROUP
- 2 to 3 oz cooked lean meat, poultry, or fish
- 1/2 c cooked dry beans, or 1 egg counts as 1 oz lean meat; 2 tbs of peanut butter count as 1 oz meat

### VEGETABLE GROUP
- 1/2 c chopped raw or cooked vegetables
- 1 c raw leafy vegetables

### FRUIT GROUP
- 1 piece of fruit or melon wedge
- 3/4 c juice
- 1/2 c canned fruit
- 3/4 c dried fruit

### FATS AND SWEETS
- Limit kcalories from these.
Servings and Calories

Calories:
- Toddlers: \( \text{cal/day} = (89 \times \text{kg} - 100) + 20 \)
- Six-year-olds eat about 1600 cal/day

Servings for Preschoolers:
- One tablespoon of a food for each year of age

Dietary Needs

- Proper fluid intake is crucial
- Protein intake increases with size
- Carbohydrate intake increases with size
- Fats are crucial for health
- Fiber intake increases with size after year 1
- Children need to eat frequently

Fat Intake

- Years 1-3: 30-40% energy
- Years 4-18: 25-35% energy
- Years 19+: 20-35% energy

Between age 2-5 can gradually transition whole milk to non-fat milk

Children who eat low fat diets have low intakes of some vitamins and minerals

Iron Deficiency

- Iron deficiency is the most prevalent deficiency in children
- Adult foods and cow’s milk are low in iron
- Iron is vital for proper brain growth and development
- Iron-deficiency anemia affects the brain before detectable in blood
Calcium

• Peak requirement is during adolescence when bones rapidly develop
• 85% of girls and 64% of boys 12-19 do not get enough calcium
• Sets individuals up for osteoporosis later in life

Vitamin A

• During rapid growth, adolescents need high levels of vitamin A to support bone growth

Supplements?

• Vitamin D, iron and fluoride can be recommended during infancy and childhood
• Other supplements usually not needed if child eats a well-balanced diet
How Are we Doing?
81% of children between age 2 and 9 have inadequate diets

Children and Eating
• It's about more than just food...
• Teaching child good eating habits
• Teaching child about social nature of eating

Mealtime with Toddlers
• Discourage unacceptable behavior
• Let toddlers explore and enjoy food
• Don't force food on children
• Let child choose which nutritious foods to eat and how much to eat
• Limit sweets
• Make mealtimes enjoyable

Diet and Adolescents
• Eating away from the home
• No longer have “gatekeeper” for food
• Time pressures
• Peer pressure
• Snacks provide at least 1/4 of calories
• Often choose foods that do not meet nutritional needs
**Teaching Healthy Eating**

- Serve family meals that reflect calorie control
- Involve children in shopping for and preparing foods
- Teach appropriate portions
- Teach them about nutrient-dense foods
- Limit high-fat, high-sugar foods
  - Don’t restrict them

**Childhood Obesity**

- Obesity in children is increasing rapidly
- Interaction between genetics and environment
- Sedentary lifestyle of many children
- Improper diet
  - Increased intake of high calorie foods
  - Nutrient-rich food replaced with calorie-rich foods

**Teaching Healthy Eating**

- Never force children to clean plates
- Plan for snack time and provide nutritious snacks
- Discourage eating while watching TV
- Encourage children to eat:
  - When hungry
  - Slowly
  - With others
  - Enjoy conversation at meals
  - Stop eating with full

**Dieting in Childhood?**

- Can lead to dangerous relationships with food and poor self-image and self-esteem
- Instead of loosing weight attempt to maintain weight when growing
- Encouraging activity
**Body Mass Index-for-Age Percentiles: Boys and Girls, Age 2 to 20**

- **BMI (kg/m²)**
  - Overweight > 95th percentile
  - Normal 10th to 85th percentile
  - Underweight <10th percentile

**Key:**
- At risk of overweight > 85th percentile

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**Trends in Childhood Obesity**

- **1970s**
  - Age 6–11 years
  - Age 12–19 years

**Key:**
- Age 6-11 years
- Age 12-19 years

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**Average Daily Intakes of Milk and Soft Drinks Compared**

- **1970s**
  - Milk
  - Soft drinks

**Key:**
- Milk
- Soft drinks

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Television watching influences children’s eating habits and activity patterns.

Over the years, adolescent milk intakes have decreased as soft drink intakes have increased.
Diet-Related Health Problems can Start Early

- High overall blood cholesterol and LDL levels
- Building of plaque on artery walls
- Hypertension

The Formation of Plaques in Atherosclerosis

When these arteries become blocked by plaque, the part of the muscle that they feed will die.

Plaques can begin to form in a person as young as 15.

The coronary arteries deliver oxygen and nutrients to the heart muscle.