New Concepts in Nutrition

PWS Food Pyramid

- FRESH & COOKED (NON STARCHY) VEGETABLES
- SPICES/SEASONING
- FERMENTED VEGETABLES
- MEAT, FISH, EGGS, MILK, YOGURT
- ORGAN MEATS
- CITRUS, SEEDS, BERRIES, AVOCADOS, NUT BUTTERS
- PROCESSED FOODS
- DRIED FRUITS
- SWEET FRUITS
- SUGAR

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Without careful energy balance, weight gain is relentless.
Calorie/Portion Control

Traditional PWS Food Pyramid emphasizes calorie control
Problem:

While caloric needs are diminished, we cannot assume that micronutrient needs are equally diminished: Therefore PWS Diet should maximize *nutritional density*:

\[
\text{Nutrient Density} = \text{Nutrients per Calorie}
\]
Ideal PWS Diet?

1. No one knows
2. No agreement on Ideal HUMAN Diet
Goals of a PWS Diet

• Calorie control
• Supply of essential nutrients
• Promotes gut health
  – Avoids foods that cause permeable gut barriers (beans, grains, white potatoes)
  – Promotes growth of healthy gut bacteria
    • (fermented foods; fiber)
• Limits/eliminates highly rewarding (sweet) foods
• No “free” foods even if there are zero calories because they always need external limits on everything.
Traditional Red, Yellow, Green Diet
Based on Len Epsteins “Stoplight Diet”

“STOP”
“CAUTION”
“GO”
Proposed Revised PWS Food Pyramid

- Red Foods provide little or no nutritional benefits; may add to food seeking/craving
- Orange Foods: nutritional benefits but also high calorie
- Yellow Foods: low fat protein sources
- Green Foods: High water content; very low calorie
<table>
<thead>
<tr>
<th>COLOR CODE</th>
<th>DESCRIPTION</th>
<th>RECOMMENDATION</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED</td>
<td>Foods which provide no nutritional benefit and are detrimental</td>
<td>Eliminate Sugar, sweets, processed foods and starchy foods.</td>
<td>Cakes, cookies, chips, bread, pasta, corn, potatoes, rice</td>
</tr>
<tr>
<td>Orange</td>
<td>Foods which have high calorie content but are very nutritious</td>
<td>Use in small servings daily</td>
<td>Unsalted nuts, avocados, grass fed butter, coconut oil, olive oil, full fat dairy, berries and other fruit</td>
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<tr>
<td>Yellow</td>
<td>Nutritious foods that are low fat and moderate in calorie content</td>
<td>Usually provide protein source at every meal</td>
<td>Lean meat and eggs, low fat dairy,</td>
</tr>
<tr>
<td>Green</td>
<td>Nutritious foods which are naturally low in calories</td>
<td>May be used generously but not without limits.</td>
<td>Lettuce and other green leafy vegetables, broccoli, cabbage, spinach, brussel sprouts, kale</td>
</tr>
</tbody>
</table>
GREEN FOODS

High nutrient and low calorie
Yellow Foods

Lean Protein
Small amounts of Fat
Very small amounts of Carbohydrate

Meat Group
75 calories per serving
1 serving = 30 grams
Lean Meat and Fish

High nutrient and medium calories
Cheese, Eggs, Cold Cut Meats

High nutrient and medium calories
Orange Foods

Fruits

Choose High nutrient, low sugar content and medium calorie
Berries are Best

Avoid sweet fruits: high reward
Orange Foods

Milk Group

Yogurt

Plain yogurt recommended; all flavored yogurts have a high sugar content

milk

Cheese

High nutrient high or medium calorie
Fats and Oils Group
1 serving = 5 ml.

High nutrient and high calorie

Recommended Fats:
- Naturally saturated fats
  - Coconut oil and animal fat
- Monounsaturated Oils
  - Olive oil and Avocado Oil
  - High oleic sunflower oil
- Avoid soybean, canola and corn oils
Orange FOODS
1 serving = 15 ml.

Recommend unsalted

High nutrient and high calorie
Fats and Oils Group
1 serving = 5 ml.

High nutrient and high calorie

Recommended Fats:
• Naturally saturated fats
  • Coconut oil and animal fat
• Monounsaturated Oils
  • Olive oil and Avocado Oil
  • High oleic sunflower oil
• Avoid soybean, canola and corn oils
Carbohydrate restriction: Reward control

• Increasing body of research evidence that highly rewarding foods are problematic for a majority of humans

• Carbohydrate addiction is still controversial but gaining credibility among researchers

• Nonnutritive Sweeteners as well as sugar disrupt equilibrium both in neurobehavioral centers of brain and in metabolic regulation (insulin stimulation) and Microbiome
Carbohydrate Considerations

• PWS is prone to diabetes.
• There is evidence that diabetes is related to high carbohydrate intake in diabetes-prone persons: “carbohydrate intolerant”
• Anecdotally, nearly all PWS food-seeking behavior is directed toward obtaining carbohydrates and sweets.
Proposed PWS Food Pyramid

Emphasizes the importance of healthy fats in the diet.

Eliminates highly rewarding low-nutrient and processed foods.

Emphasizes unprocessed high-nutrient foods (always with limits).

FRESH & COOKED (NON STARCHY) VEGETABLES
SPICES/SEASONING,
FERMENTED VEGETABLES

MEAT, FISH, EGGS, MILK, YOGURT
OTHER FERMENTED DAIRY

CITRUS, SEEDS, BERRIES, AVOCADOS,
NUT BUTTERS
ORGAN MEATS

SUGAR, STARCH,
Sweet Fruits
Dried Fruits
PROCESSED FOODS
Traditional diets of all cultures prior to Food “Industry” included:

- Raw foods
- Organ meats
- Fermented foods
- Bone broth