FOOD AND DIETARY GUIDELINES
FOOD: WHAT IS IT?

- 2002"Food" (or "foodstuff") means any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans.

- "Food" includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment.
WHAT ARE NUTRIENTS
NUTRIENTS

- Protein
- Fat
- Saccharides
- Vitamins
- Minerals and trace elements
F O O D  G R O U P S

Vegetable food
- Grains
- Roots & tubers
- Pulses
- Vegetables
- Fruits

Animal food
- Milk & products
- Meat & products
- Eggs
STAPLE FOOD

- Main source of energy
  - Energy in the form of starch = polysaccharides
- Grains
- Starchy tubers & roots

- Desirable Protein : Fat : Saccharide ratio
  - 8-15 : 20-30 : 55-60 % of energy from food
WHY SHOULD WE EAT GRAIN PRODUCTS?

- Grain products are a source of polysaccharides
- What other nutrients do grain products provide?
GRAIN PRODUCTS

- Staple food: source of energy - polysaccharides (up to 75g/100g)
- Protein (7-14 %): up to 30 % of daily intake.
  + Little LYS, some little TRY
- Fat only 1 – 5 %
- Whole grains: fiber
  + helps to reduce blood cholesterol levels and may lower risk of heart disease
  + prevents constipation and diverticulosis.
  + provides a feeling of fullness with fewer calories.
- Whole grains: micronutrients vitamins B1, B2, niacin, Fe, Ca
WE ARE POTATO EATERS: WHAT IS GOOD ABOUT THAT?
Potatoes

- **Staple food**: 300 kJ/100g
- **Starch – polysaccharide**: 15g/100g
- **Protein – little but good quality**: (2g/100g)
- **Vitamin C**: (8-18 mg/100g)

Chips, french fries: too much fat! salt!
CZECH DIETARY GUIDELINES


HEALTHY 13 (2007)
1. Maintain **an adequate body weight**
   - BMI 18.5-25.0 kg/m²
   - waist circumference men < 94 cm women < 80 cm.

- **Apple > risk of heart disease than pear**

<table>
<thead>
<tr>
<th></th>
<th>Increased risk</th>
<th>High risk</th>
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</thead>
<tbody>
<tr>
<td>Men</td>
<td>&gt; 94 cm</td>
<td>&gt; 102 cm</td>
</tr>
<tr>
<td>Women</td>
<td>&gt; 80 cm</td>
<td>&gt; 88 cm</td>
</tr>
</tbody>
</table>
2. **Move** daily at least 30 minutes e.g.
   + Fast walk
   + Exercise
3. Eat a **variety of food** divided into **4-5 daily meals**, do not skip breakfast, do not eat late in the evening.

**Eat a variety of food.** About 40 different known nutrients, and probably additional as yet unknown factors, are needed to maintain health. No single food can supply all the essential nutrients in the amounts needed (except for breast milk during first 6 months of age). Thus the greater the variety of foods used, the less likely a person is to develop either a deficiency or an excess of any single nutrient.
9:00 1 wholemeal bun, tea 250 ml no sugar
12:00 Chicken chinese dish, rice
16:00 Sweet hot dish (white bread, cottage cheese, apple)
During the day 2 l soft drinks

9:00 1 open sandwich with mayonnaise, coffee - no sugar
12:00 Fried breaded pork steak, potato
16:30 Cucumber sauce, beef, 4 dumplings
During the day 2 l soft drinks

9:00 100 g cheese eidam, 1 bun, tea 250 ml no sugar
11:30 Roast beef with cream sauce, 3 dumplings
16:00 3 apples
18:00 1 slice bread, 30 g cheese, 0,5 l milk 1.5% fat
During the day 2 l soft drinks
AID FOR ASSESSMENT

- **Fats, oils, and sweets**: Use sparingly
- **Proteins/meats**: (Meat, poultry, fish, dry beans, eggs, and nut) 2-3 servings
- **Dairy Products**: (Milk, yogurt, & cheese) 2-3 servings
- **Vegetables**: 3-5 servings
- **Fruits**: 2-4 servings
- **Breads/grains**: (Bread, cereal, rice, & pasta) 2-4 servings
4. Eat adequate quantities of vegetables (raw & cooked) and fruits:

- At least 500 g daily
- Vegs twice more than fruits
- Divided into several portions
- Eat smallish amounts of nuts from time to time.
DO YOU EAT 500 G OF VEGS & FRUITS A DAY?
**How Much is about 0.5 kg of Fruits and Vegetables**

- 2 medium tomatoes: 160 g
- 1 serving cooked vegetable: 150 g
- 2 medium apples: 260 g
- **Total**: 570 g

**Fruits & veggies** consumption in CR increases but slowly, more fruits than veggies.
FRUITS & VEGETABLES

- Source of **vitamins, minerals, fiber**
- Except for offal & a little amount in milk, **Vitamin C** is only found in veggies & fruits
- Veggies in average ½ energy than fruits but 2x more vitamins & minerals
- Large volume, low energy content, minimum fat
- Energy: mono-, di-, polysaccharides
- Protective role of substances currently not included among nutrients
  - Salicylates
  - Lykopen
  - Phytoestrogens
  - Alginates
  - Carotenoids
  - Polyphenols
  - Flavonoids
Eating a diet rich in fruits and vegetables as part of an overall healthy diet may:
- reduce risk for stroke and perhaps other CV diseases
- reduce risk for type 2 diabetes.
- protect against certain cancers (mouth, stomach, colon-rectum)

Rich in potassium may reduce the risk of developing kidney stones and may help to decrease bone loss.

Low in calories instead of some other higher-calorie food may be useful in helping to lower energy intake.
FOOD VARIETY IS IMPORTANT!

100 mg vitamin C equivalents

<table>
<thead>
<tr>
<th>Food</th>
<th>Grams of food containing 100 mg of vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black current</td>
<td>170</td>
</tr>
<tr>
<td>Pepper</td>
<td>170</td>
</tr>
<tr>
<td>Young onion</td>
<td>210</td>
</tr>
<tr>
<td>Orange</td>
<td>270</td>
</tr>
<tr>
<td>Strawberry</td>
<td>300</td>
</tr>
<tr>
<td>Potato - new</td>
<td>700</td>
</tr>
<tr>
<td>Kohlrabi</td>
<td>900</td>
</tr>
<tr>
<td>Sauerkraut</td>
<td>1160</td>
</tr>
<tr>
<td>Local fruits - average</td>
<td>1190</td>
</tr>
<tr>
<td>Tomato</td>
<td>1250</td>
</tr>
<tr>
<td>Cabbage</td>
<td>1560</td>
</tr>
</tbody>
</table>
5. Eat **grain products** (dark bread, wholegrain is best, pasta, rice) or **potatoes** at most 4 times a day

Do not forget **pulses** – at least once a week

*Eat more sources of fibre.* With an increased use of processed and refined foods, the modern diet in industrialized countries is relatively low in dietary fibre. Increasing the use of less refined carbohydrate foods (e.g. wholemeal bread), vegetables and some kinds of fruits will help increase dietary fibre. Evidence exists that certain types of dietary fibre can help control chronic bowel diseases, contribute to improved blood glucose management for persons with diabetes mellitus, and bind dietary lipids such as cholesterol.
EQUIVALENTS OF 30 G OF FIBRE IN FOODS (G)

- Lentils: 273 G
- Wholemeal bread: 300 G
- Banana: 882 G
- Potato: 1428 G
- Apple: 1500 G
- Tomato, pepper: 1935 G
- Lettuce, cucumber: 3333 G
HEALTHY 13

- 6. Eat **fish** and **fish products** at least twice a week
FISH: MAIN NUTRIENTS (G/100 G)
- **Protein**
- **Sea fish I, F**
- **Vitamins A, D**
- **Small fish eaten with bones:** *calcium*
- **Fatty sea fish** **PUFA n-3**
7. Eat daily milk and milk products
   - Especially fermented (probiotic microorganisms);
   - Preferably chose medium and low fat.
MILK & MILK PRODUCTS

- „Milk“ = product of mammalian mammary gland
- Protein
- Hidden saturated fats
- Lactose
- Calcium: 60% of our intake
- P, K, Mg
- Fat & water soluble vitamins, little vit. C
Probiotics

“Probiotic” antonym to “antibiotic”

Live food supplement
  + E.g. *Lactobacillus acidophilus, Bifidobacterium bifidum, breve, longum*

Yoghurt and other fermented milk products
  + Minimum 10 million bacteria in 1 ml

Action:
  + Improves microbial spectrum in the gut
  + Immunity
  + Prevention of colon cancer
  + Controls cholesterol blood level
  + Prevention of constipation
PREBIOTICS

- Help prebiotic bacteria to grow
- Oligosaccharides e.g. inulin
- Added to products with probiotics
8. Monitor your fat consumption, limit your fat intake:

- In hidden form (fat meat, fat meat and milk products, fatty bakery products, chips, chocolate),
- As bread spreads
- Added during meal preparation

Replace animal fats by vegetable oils.

Decrease the consumption of fat, especially animal fat. Populations of a number of developed countries, including the Czech Republic, consume a high fat diet. High fat diet is associated with a number of chronic disorders, thus it is wise to cut down on fats in general, especially on animal fats, using them only in moderation. It means selecting lean meats and low fat milk products as well as avoiding foods to which fat is added during cooking (e.g. fried foods, cream sauces, mayonnaise salads). Steaming, boiling or microwaving should be used to help reduce the amount of fats added to food.
EQUIVALENTS OF 70 G FAT IN FOODS (G)
9. Limit your **sugar** consumption especially in sweet beverages, sweets, fruit preserves, and ice-cream.

**Avoid too much sugar.** The energy content of sugar contributes to the increase of weight. Excess sugar consumption is associated with tooth decay. The daily consumption of sugar should not exceed 10% of the total energy intake.

(BUT: *Saccharides* should provide 55-60% of energy.)
10. Limit your **salt** consumption and consumption of salty foods (chips, salted & nuts, salty smoked products & cheese)

Do not add salt to meals at the table.

**Avoid too much salt.** Excessive sodium intake contributes to the development of high blood pressure. In general, since many processed food products contain considerable salt and since most people eat more salt than they need, it is wise to limit the use of the salty products and reduce added salt in food preparation. These practices will lower individual salt tastes, which are learned habit and not biologic necessities. There is ample sodium as a natural mineral in foods to meet the usual needs.
**FOOD SALT CONTENT**

- Bakery products: about 1g/100g
- Meat products: 2- >3 g/100g
- Cheese: about 2- >5 g/100g

**Example:**

2 bread rolls (1,08g) + 100 g salami (3,2) + 1 pickled cucumber (0,6g) = 4,88 g NaCl
11. Prevent food borne infection & poisoning - hygienic handling of food during shopping, storing, and meals preparation
   + Dealt with in epidemiology

Limit frying & grilling food – formation of polycyclic aromatic hydrocarbons
   + carcinogenic potential,
   + participate in cancerogenesis,
   + increase oxidative stress
   + indicator of exposition: benzo(a)pyren.
12. Drink sufficient quantities of **fluids**, at least 1.5 l

- Water, mineral water, weak black tea, herbal teas & juices – preferably without sugar.

**Drinking adequate amounts of fluids** evenly during the day prevents damage to kidneys and nephrolithiasis. Pure water is the most suitable fluid. Also appropriate are various mineral waters, herbal or fruit teas, and diluted natural juices. Very sweet beverages are not recommended as they contribute energy to the total intake without contributing other nutrients.
### WATER BALANCE

<table>
<thead>
<tr>
<th>Intake</th>
<th>ml</th>
<th>Output</th>
<th>ml</th>
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</thead>
<tbody>
<tr>
<td>Food</td>
<td>1000</td>
<td>Respiration</td>
<td>550</td>
</tr>
<tr>
<td>Beverages</td>
<td>1500</td>
<td>Skin</td>
<td>600</td>
</tr>
<tr>
<td>Metabolism</td>
<td>300</td>
<td>Urine</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stool</td>
<td>150</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2800</strong></td>
<td><strong>TOTAL</strong></td>
<td><strong>2800</strong></td>
</tr>
</tbody>
</table>
“8 GLASSES OF 8 OZ OF LIQUID PER DAY”

- No single study that has led to this recommendation
- Individuals in hot, dry climates have increased need for water, as do people who engage in strenuous physical exertion
- Disease states, such as nephrolithiasis, for which increased fluid intake is therapeutic
- Do healthy individuals in a temperate climate need to drink extra fluid—even when not thirsty — to maintain health?
  - No clear evidence of benefit
  - No clear evidence of lack of benefit

Valtin, H. Drink at least eight glasses of water a day.” Really? Is there scientific evidence for “8 x 8”? Am J Physiol Regul Integr Comp Physiol 283: R993–R1004, 2002
13. If you drink **alcoholic beverages**, do not exceed daily intake of 20 g of alcohol:

- 200 ml wine,
- 0.5 l beer,
- 50 ml spirit.

*If you drink alcohol, do so in moderation.* Alcoholic beverages tend to be high in energy and low in other nutrients. Limited food intake may accompany large alcohol intake. Also, heavy drinking contributes to chronic liver disease and some neurological disorders, as well as some cancers. Thus moderation is the key, if alcohol is used at all.