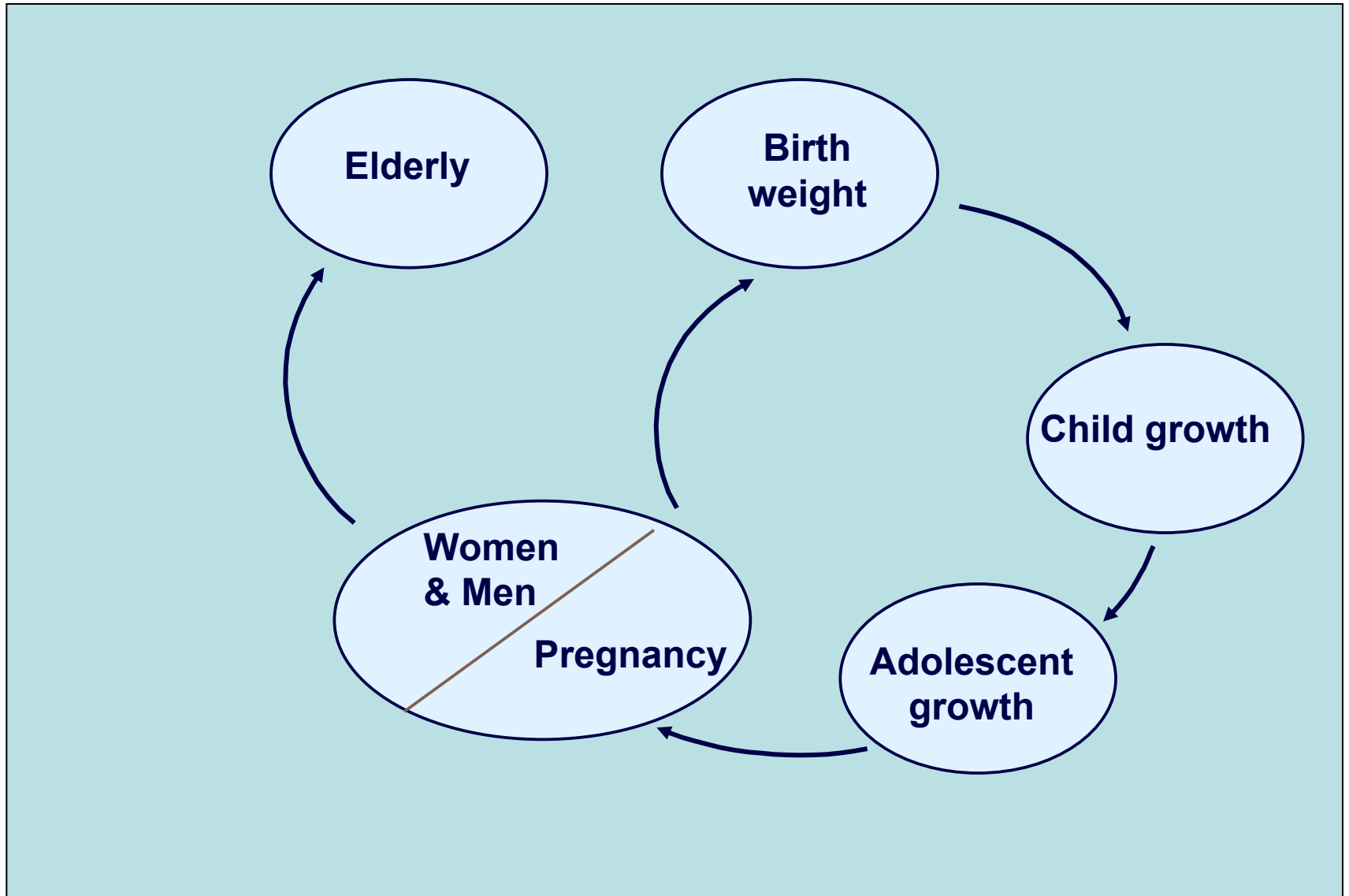


# A Nutrition Strategy based on A LIFE-CYCLE APPROACH



# Healthy Nutrition for Mothers

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# Portion sizes

## Cereal group

Bread, rolls, rice, pasta, cereals

1 serving =

1 large slice of bread (30 – 40 g) or

½ cup cooked pasta or rice

# Portion sizes

## Vegetables and fruits

1 serving =

1 piece of apple, pear, banana, carrot, green pepper, large tomato

or

160 ml of 100% pure vegetable or fruit juice

# Portion sizes

## Milk and dairy products

1 serving =

1 glass (300 ml) of milk

or

1 cup (200 ml) of yoghurt

or

55 g of hard cheese

or other dairy product

in quantity equivalent to 300 mg calcium

# Portion sizes

## Meat, fish, poultry, legumes and alternatives

1 serving =

80 g cooked poultry, meat or fish

or

1 cup (150 – 200 g) of cooked beans

or

1 egg

# Portion sizes

## Fats, sweets, fatty and sugary food

1 serving =

- 2 tsp butter, margarine or lard (10 g)

or

- 4 tsp oil

or

- 10 g sugar

# WHO 10 points score questionnaire:

(answer “yes” is achieving 1 point, “no” 0 points)

1. Have you eaten at least 6 servings of cereals, pasta, bread or rice?
2. Have you eaten at least 3 servings of vegetable?
3. Among them, were at least 2 servings of fresh vegetables?
4. Have you eaten at least 2 servings of fruits?
5. At least 1 serving of fresh fruit?
6. Did each food group contain variety of food items?
7. Have snacks and foods consumed between main meals any nutritious value except energy?
8. Have you eaten at least 2 servings of milk or dairy products?
9. Have you eaten at least 2 servings from the food group of poultry, fish, meat, pulses?
10. Mostly non fat, lean or low fat product were chosen?



# Quick assessment of nutritional status of the mother I.

Medical history

Personal history

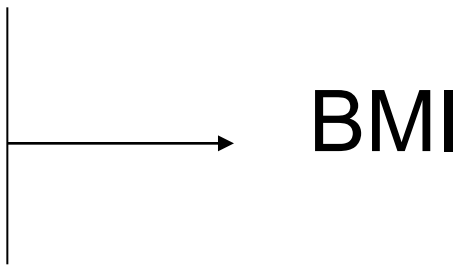
Ask questions about:

- weight change
- anorexia
- diarrhoea
- constipation
- concentration
- vomiting
- sickness in the nearest past (1 – 3 months).

# Observation of clinical signs of malnutrition

- Dry skin
- Wasted muscles
- Hair without lustre
- Slow pulse
- Reduced blood pressure
- Oedema
- Anaemia
- Diarrhoea
- Psychological and mental disturbances  
(loss of concentration, sleeping disturbances)

# Basic anthropometric assessment

- weight
  - height
- 
- A diagram consisting of a vertical line with a horizontal arrow pointing to the right from its midpoint. The arrow points to the text 'BMI'. The words 'weight' and 'height' are positioned to the left of the vertical line, with 'weight' above and 'height' below the arrow's origin.
- BMI
- skin folds
  - MUAC (mid upper arm circumference)  
women 21-23 cm

# Energy needs in people living with HIV (asymptomatic HIV infected)

- increase by 10% to maintain body weight and physical activity
- 30 – 35 kcal / kg / day → 300 – 400 additional kcal / day for adult people for weight maintenance

# Energy needs in people living with HIV (symptomatic HIV, and subsequently during AIDS)

- increase by 20 – 30% to maintain body weight
- for weight gain, increase by 30 – 50 % →  
→ 35 – 40 kcal/kg/day
- acute infection: 40 – 50 kcal/kg/day

in adult people

# Nutritional needs of pregnant women for combating HIV

- additional 310 kcal / day since 2<sup>nd</sup> months to support fetal growth and development
- additional 6 g/ day of proteins
- at least 0.4 mg folic acid
- micronutrient supplements (iron, calcium)

# Nutritional needs of lactating women for combating HIV

- additional 360 – 400 kcal / day for the 6 first months, comparing with HIV negative mother
- 1 extra meal of 750 kcal / day

# Protein requirements of HIV+ women

- extra protein (increase by 50%) is needed for improve immune function and lean muscle mass
- asymptomatic: 1.1 – 1.5 g / kg / day
- symptomatic or malnourished:  
1.5 – 2.0 g / kg / day
- acute infection with fever: 2.0 – 2.5 g / kg / day



# Energy needs in people living with HIV (in children)

with HIV symptomatic, experiencing weight loss:  
increase by 50 – 100% (if possible)

# Nutritional needs of HIV+ women (Vitamins)

- deficit of B6, B12 is associated with faster progression to the stage of AIDS
- normal level of B12 ( $>120$  pmol/l) would delay the progression to AIDS with 4 years
- increase of vitamin E ( $>23$  umol/l) delays with 1.5 year
- deficit of vitamin A, D and zinc is associated with faster progression to AIDS

# Nutritional side-effects of iron supplements

- constipation
- nausea
- appetite loss
- in some cases diarrhoea

Advice: nutritional support (prevention of constipation eating fruits and fiber-rich foods), as an appetizer, drinking small amount of vegetable juice before meals

# ARV and possible nutritional problems

- Many ARV cause nausea, vomiting, abdominal pain, pancreatitis, diarrhea, anorexia, jaundice, oral ulcers, abnormal taste,
- Antiretroviral treatment can influence the metabolism (fats can be less metabolized)
- When protease inhibitors are introduced, hypertriglyceridemia and cholesterolemia and hyperglycemia (insulin intolerance) can occur
- Some patients are gaining weight quite rapidly – be careful to avoid obesity

# Smoking – specific risk for HIV+ pregnant women

Smoking is associated with

- increased risk of low birth weight  
(in average by 127 – 274 g)
- pre-term baby

For the mother smoking affects

- the rate of Basal metabolism is increased
- appetite loss, which increases the risk of wasting
- impaired immune function (IgA, IgM, T-cells)
- increase of oxidative stress by activity of macrophages

# Alcohol and drugs in pregnancy

- Alcohol consumption may cross placenta and enters foetal circulation
- Foetal alcohol syndrome
- Spontaneous abortion, premature delivery
- Low birth weight
- Placental abruption

# Alcohol and lactation

- Alcohol can potentially reduce breast milk volume (in excess of 0.5 g/kg of maternal weight)
- If alcohol cannot be excluded completely, limit alcohol intake to maximum 1 drink per day (10 – 12 g ethanol)

# Healthy nutrition

## Attributes of healthy nutrition:

- weight maintain
- growth - where applicable
- immune function
- physical activity
- antioxidant protection
- recovering from disease
- psychological, social and cultural satisfaction
- food safety



# Attributes of healthy nutrition

- variety
- based mainly on plant foods (cereals, vegetable, fruits)
- accompanied by relatively small amounts of low fat milk, cheeses, kefir, yoghurts
- and fish, lean red meats and poultry
- with limited amount of salt (iodized): 6 g /day
- with preferably low fat products
- with limited amount of sugars (sucrose)

# Variety

## Examples:

- during the day, variety of vegetables is eaten (not only 3 tomatoes, but 1 tomatoe, 1 carrot, 1 cup of cabbage)
- not only bread, but rice, cereals, bread and pasta during one day
- not only milk 3 times a day is drunk, but yoghurt and cheese is eaten as well

# Food groups

Each food group is consistent regarding

- nutrient content (milk group, meat , fish, poultry and bean group, vegetable group)
- or origin (milk group, fruit and vegetable)
- or desirability (fats and sugar)

# Bread, cereals, pasta, rice and potato group

- provide with main source of energy
- wholemeal cereals and rye breads are rich in fiber
- contain also calcium, iron, zinc, B vitamins
- Examples of recommended foods:  
bread, rice, macaroni, spaghetti, buckwheat (griechka), potatoes
- Examples of non-recommended foods:  
cake, chips

# Vegetables group

- the best source of vitamins (vitamin C) and minerals, incl. iron
- Recommended: 3 - 5 portions per day
- Recommended food items:
  - fresh vegetables, boiled.
- Less recommended: fried vegetables
- Non recommended: pickled salty vegetable, sweet fruit jam

# Fruit group

- contains vitamin C, beta caroten, fiber
- Recommended: 2 – 4 portions
- Recommended food items:

apple, pear, banana, orange, berries, 100%  
fruit juice

- Less recommended:

dry fruits

- Non recommended:

sweet fruit jam, juice from sugary kompot

# Milk and dairy products group

- the richest source of calcium
- 1 portion is equivalent to 300 mg of calcium
- Recommended 2 – 3 servings
  
- Recommended food items:  
milk, yoghurt, cheese, cottage cheese, kefir
- Non recommended:  
salty and fatty cheese, eiscream, cream

# Fish, poultry, meat and bean group

- source of iron and protein, vitamin A
- fish is a source of PUFA
- Recommended 1-2 portions per day

## Examples of

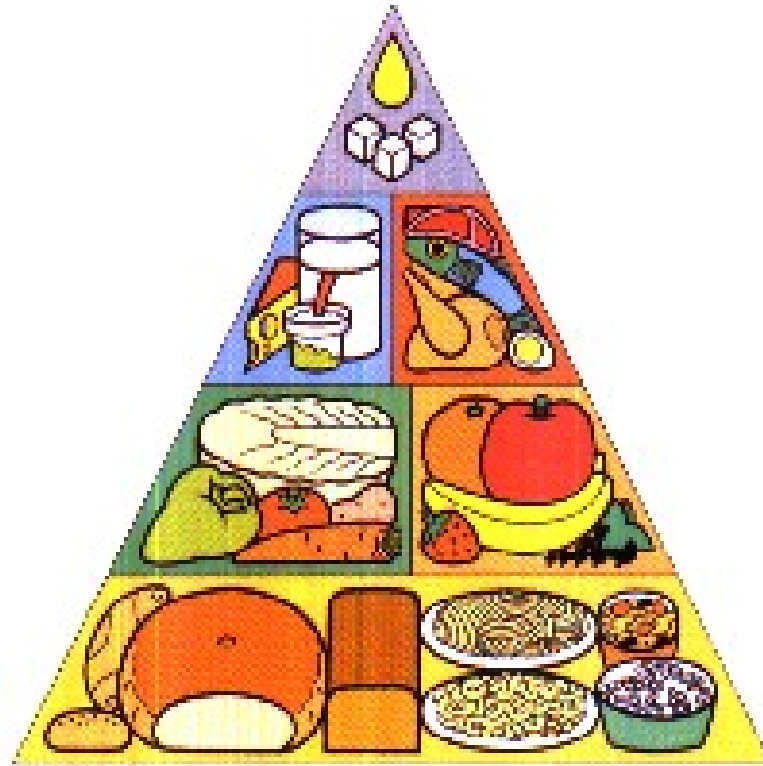
- Recommended food items:  
cooked meat, boiled egg, boiled lentils
- Non recommended:  
smoked fatty and salty meat products, raw meat,  
raw egg



# Fat, sugar and salt group

- source of energy
- only oils are nutritionally valuable
- use sparingly
  
- try to use oils instead of animal fats
- limit salt intake by maximum 6 g per day, use preferably iodized salt
- control sugar intake also in soft drinks

# Example of Food Guide Pyramid



# CINDI

## 12 steps to healthy eating

1. Eat a nutritious diet based on a variety of foods originating mainly from plants rather than mainly from animal origin
  - CINDI Dietary Guidelines – CVD prevention
2. Eat bread, grains, pasta, rice or potatoes several times per day
3. Eat a variety of vegetables and fruits, preferably fresh and local, several times per day (at least 400 g per day)
  - CINDI Dietary Guidelines – CVD prevention

# CINDI

## 12 steps to healthy eating-cont.

4. Maintain body weight between the recommended limits (BMI between 20-25) by taking moderate levels of physical activity, preferably daily
5. Control fat intake (not more than 30% of daily energy) and replace most saturated fats with unsaturated vegetable oils or soft margarines
6. Replace fatty meat and meat products with beans, legumes, lentils, fish, poultry or lean meat.

# CINDI

## 12 steps to healthy eating – cont.

7. Use low fat milk and dairy products (kefir, sour milk, yoghurt and cheese) that are low in both fat and salt.
8. Select foods which are low in sugar and eat refined sugar sparingly, limiting the frequency of sugary drinks and sweets.
9. Choose a low salt diet. Total salt intake should not be more than one teaspoon (5 gr) per day, including the salt in bread, processed, cured and preserved foods. (Universal salt iodization where iodine deficiency is endemic).

# CINDI

## 12 steps to healthy eating – cont.

10. If consumed, limit alcohol intake to no more than 2 drinks (each containing 10 gr of alcohol) per day.
11. Prepare food in a safe and hygienic way.  
Steam, bake, boil or microwave to help reduce the amount of added fats, oils, salt and sugars.
12. Promote exclusive breast feeding for about 6 months and recommended the introduction of appropriate foods at correct intervals during the first years of life.

# Sources of iron

- Two types: Haem and non-haem iron
- haem iron is present in haemoglobin and myoglobin in meat (particularly liver) and fish – average absorption is around 25%.
- non-haem iron is found in foods of plant origin, absorbed in approx. 2 – 5%.

# Bioavailability of iron I.

<b>Food group</b>	<b>low</b>	<b>moderate</b>	<b>high</b>
Cereals, bread,pasta	corn wheat, rye wholemeal flour	corn flour	
Fruits	avocado banana peach apple strawberries	pineapple mango water melon	lemon orange papaya



# Bioavailability of iron II.

<b>Food group</b>	<b>low</b>	<b>moderate</b>	<b>high</b>
<b>Vegetables</b>	green beans lentiles spinach	carrot potatoes	radish Brussel sprouts cabbage cauliflower
<b>Protein sources</b>	egg textured soya protein soya flour		offals, organs red meat poultry fish

# Inhibitors of iron absorption

- phytates (present in cereal bran, high-extraction flour, legumes, nuts, seeds)
- inositol
- tannins (iron-binding phenolic compounds), e.g. tea, coffee, cocoa, herbal infusions, spices (oregano)
- calcium, particularly from milk and milk products

# Iron-rich diet

- Breakfast: bread with cheese, orange juice
- Snack: roll with meat cream, green pepper
- Lunch: vegetable soup borshch, rice with chicken liver, vegetable salad
- Snack: yoghurt, apple
- Dinner: bread with salami, tomatoe

# Evaluation: Iron-rich diet

Rice with chicken liver

iron content in 1 serving ~ approx. **10 mg**

- dry brown rice, 50 g
- oil, 10 g
- onion, 1 small piece
- chicken liver, 80 g

Rice boiled in 100 ml of water, fried onion, fried pieces of liver.

# Iron-sufficient diet

- Breakfast: bread with jam, fruit juice
- Snack: hot dog
- Lunch: bouillon with egg yolk, black beans, broccoli, cauliflower, 2 tomatoes, zucchini, rice
- Snack: fruit salad (2 apples, 1 pear, 2 apricots)
- Dinner: cabbage, potatoes, bread

# Evaluation of iron-sufficient diet

- no haem iron, but
- sufficient sources of vitamin C (enhancer of iron absorption)
- diet quite rich in non-hem iron sources, e.g. vegetable (with high bioavailability)
- sufficient for person with moderate iron requirement

# Iron-deficient diet

- Breakfast: wheat porridge with milk (kasha), tea
- Snack: yoghurt
- Lunch: milk soup with potatoe, legumes with boiled egg, tea
- Snack: icecream
- Dinner: buckwheat (griechka) with fried onion, tea

# Evaluation of iron-deficient diet

- no haem sources of iron
- no sources of vitamin C (vegetables, fruit)
- tea drunk together with the meals  
(polyphenols – inhibitors of iron absorption)
- low content of iron in total



# Counsel for Anna

- Stop smoking cigarettes
- Eat at least 5 a day
- Eat vegetables (e.g. tomatoes, carrot, cabbage, green pepper) 3 times a day
- Eat fruit (e.g. apple, banana, orange, pears, berries) 2 times a day
- Eat milk products and milk (yoghurt, kefir, ryazhenka, milk, cheese) 2-3 times a day
- Don't drink alcohol
- To correct anaemia, add hem iron sources (e.g. liver, beef, pork, lamb). Don't drink tea.

# Counsel for Galina

- Don't drink too much alcohol (not every day)
- For breakfast, limit the foods to bread and butter or margarine and a piece of fruit
- For snacks, yoghurt or vegetable salad is recommended
- For lunch, e.g. chicken with rice and vegetable salad
- For dinner, boiled potatoes or bread with cheese and piece of fruit

# Counsel for Natasha

- Stop smoke, limit alcohol
- For breakfast, 2 boiled eggs, bread and butter, banana
- For snacks, yoghurt and apples
- For lunch, e.g. vegetable soup, poultry with rice, vegetable salad
- For dinner, bread with cheese and meat, vegetable
- Don't drink tea before breastfeeding (it makes baby not to sleep)

# Counsel for Marina

- Don't combine the tea with vegetable or fruit
- Treat anaemia with iron supplements,
- then eat foods of plant origin which are iron-rich, e.g. cabbage, Brussel sprouts, broccoli, colliflor, radish, tomatoe, orange
- Don't combine calcium and iron sources within one meal

# Counsel for Gulnara

- Find somebody (NGO etc.) who can help you with quitting the drugs
- Control your caloric intake limiting eggs, meat, butter, eiscream, sweets, chocolatte
- Add vegetable salads and fruits
- Instead of caloric snacks, e.g. hot dog, eat low-fat yoghurt or fruit
- Limit drinking tea