

CHILDHOOD HYGIENE

**breastfeeding support • infant and toddler
nutrition • growth charts • social pediatrics**

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Breastfeeding support

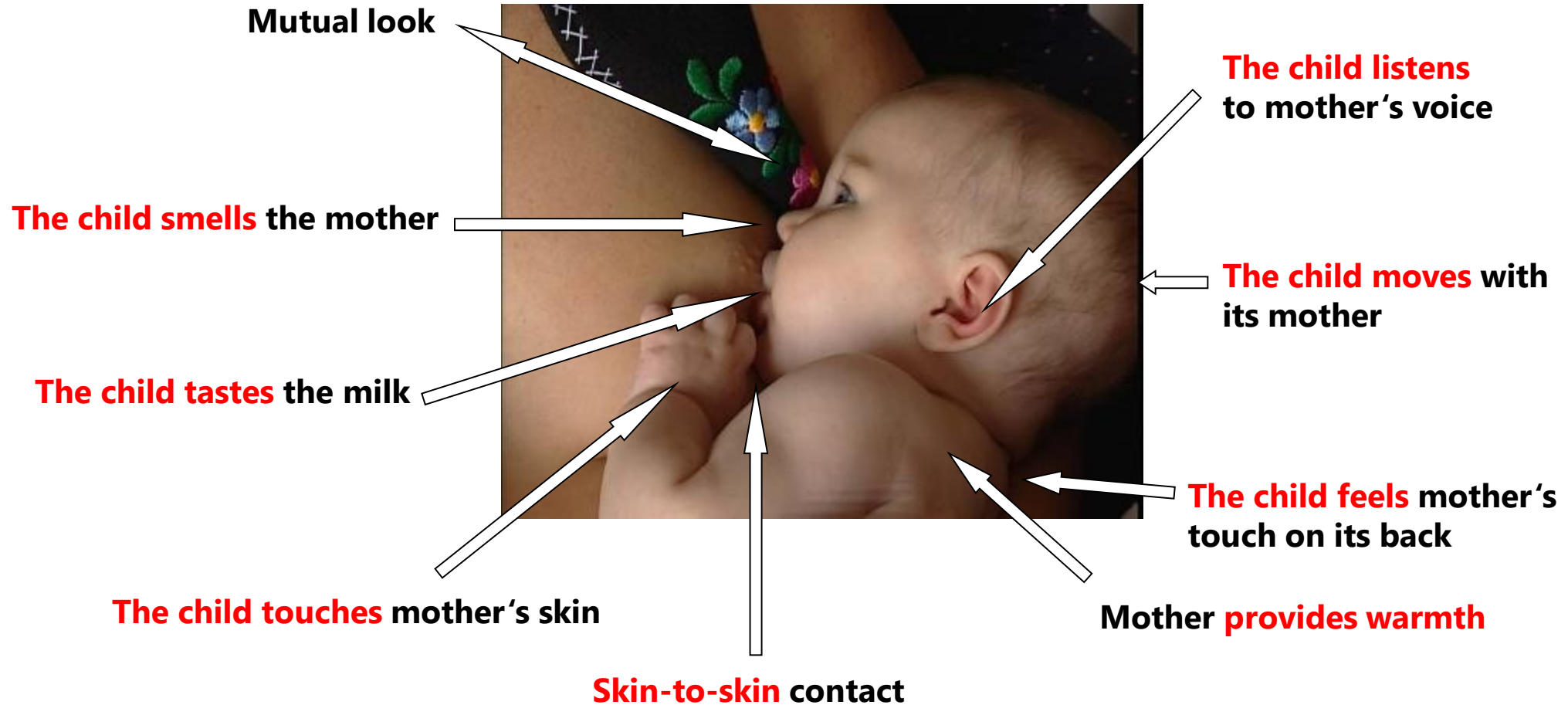


Not only milk drinking!

- **exclusive breastfeeding:**
 - childhood and adolescence obesity prevention
 - decrease in infant mortality
 - lower incidence – atopic dermatitis, otitis media, URT infection, GIT infection
- mothers – **lower risk** of postpartum depression, mammal and ovarial tu, T2DM, osteoporosis, rheumatoid arthritis
- contraceptive effect

relationship between child and mother

Stimuli for child's brain



Author: Nils Bergman

Childhood hygiene

Breastfeeding support

Breast milk composition

- specific for animal species
- appropriate with lifestyle, genetics and individual needs
 - milk of bats low in water, milk of sea mammals higher in fat, milk of primates higher in carbohydrates
- composition variable in time due to change in needs
- transfer of information about child's needs during BF
- **standard sample of BM doesn't exist** due to variability

Breast milk composition

- **energy:** 280–290 kJ/100 ml
 - P : F : CH = 7–10 : 50 : 40
- **protein:** 0,9–1,3 g/100 ml
 - whey/casein ratio – digestibility
- **fats:** 4 g/100 ml
 - lipase – easier digestion, rich in PUFA (DHA), cholesterol
- **carbohydrates:** 7 g/100 ml
 - Lac (absorption of Ca, Fe), Fru, Gal (galactolipids for CNS development)
 - oligosaccharides – microbiota support

DID YOU EVER WONDER WHAT'S IN... ?

BREASTMILK

DHA

WATER

CARBOHYDRATES (energy source)

- Lactose
- Oligosaccharides (see below)

CARBOXYLIC ACID

- Alpha hydroxy acid
- Lactic acid

PROTEINS

(building muscles and bones)

- Whey protein
 - Alpha-lactalbumin
 - HAMLET (Human Alpha-lactalbumin Made Lethal to Tumour cells)
 - Lactoferrin
 - Many antimicrobial factors (see below)
- Casein
- Serum albumin

NON-PROTEIN NITROGENS

- Creatine
- Creatinine
- Urea
- Uric acid
- Peptides (see below)
- Amino Acids (the building blocks of proteins)
 - Alanine
 - Arginine
 - Aspartate
 - Cysteine
 - Cystine
 - Glutamate
 - Histidine
 - Isoleucine
 - Leucine
 - Lycine
 - Methionine
 - Phenylalanine
 - Proline
 - Serine
 - Taurine
 - Threonine
 - Tryptophan
 - Tyrosine
 - Valine
 - Carnitine (amino acid compound necessary to make use of fatty acids as an energy source)
- Nucleotides (chemical compounds that are the structural units of RNA and DNA)
 - 5'-Adenosine monophosphate (5'-AMP)
 - 3'-5'-Cyclic adenosine monophosphate (3'-5'-cyclic AMP)
 - 5'-Cytidine monophosphate (5'-CMP)
 - Cytidine diphosphate choline (CDP choline)
 - Guanosine diphosphate (UDP)
 - Guanosine diphosphate - mannose
 - 3'- Uridine monophosphate (3'-UMP)
 - 5'-Uridine monophosphate (5'-UMP)
 - Uridine diphosphate (UDP)
 - Uridine diphosphate hexose (UDPH)
 - Uridine diphosphate-N-acetyl-hexosamine (UDPAH)
 - Uridine diphosphoglucuronic acid (UDPGA)
 - Several more novel nucleotides of the UDP type

FATS

Triglycerides

- Long-chain polyunsaturated fatty acids
 - Docosahexaenoic acid (DHA) (important for brain development)
 - Arachidonic acid (AHA) (important for brain development)
 - Linoleic acid
 - Alpha-linolenic acid (ALA)
 - Eicosapentaenoic acid (EPA)
 - Conjugated linoleic acid (Rumenic acid)

Free Fatty Acids

- Monounsaturated fatty acids
 - Oleic acid
 - Palmitoleic acid
 - Heptadecenoic acid
- Saturated fatty acids
 - Stearic
 - Palmitic acid
 - Lauric acid
 - Myristic acid

Phospholipids

- Phosphatidylcholine
- Phosphatidylethanolamine
- Phosphatidylinositol
- Lysophosphatidylcholine
- Lysophosphatidylethanolamine
- Plasmalogens

Sphingolipids

- Sphingomyelin
- Gangliosides
 - GM1
 - GM2
 - GM3
- Glucosylceramide
- Glycosphingolipids
- Galactosylceramide
- Lactosylceramide
- Globotriaosylceramide (GB3)
- Globoside (GB4)

Sterols

- Squalene
- Lanosterol
- Dimethylsterol
- Methosterol
- Lathosterol
- Desmosterol
- Triacylglycerol
- Cholesterol
- 7-dehydrocholesterol
- Stigma-and campesterol
- 7-ketocholesterol
- Sitosterol
- β-lathosterol
- Vitamin D metabolites
- Steroid hormones

cholesterole

VITAMINS

- Vitamin A
- Beta carotene
- Vitamin B6
- Vitamin B8 (inositol)
- Vitamin B12
- Vitamin C
- Vitamin D
- Vitamin E
- a-Tocopherol
- Vitamin K
- Thiamine
- Riboflavin
- Niacin
- Folic acid
- Pantothenic acid
- Biotin

MINERALS

- Calcium
- Sodium
- Potassium
- Iron
- Zinc
- Chloride
- Phosphorus
- Magnesium
- Copper
- Manganese
- Iodine
- Selenium
- Choline
- Sulphur
- Chromium
- Cobalt
- Fluorine
- Nickel

METAL

- Molybdenum (essential element in many enzymes)

GROWTH FACTORS (aid in the maturation of the intestinal lining)

- Cytokines
 - interleukin-1β (IL-1β)
 - IL-2
 - IL-4
 - IL-6
 - IL-8
 - IL-10
- Granulocyte-colony stimulating factor (G-CSF)
- Macrophage-colony stimulating factor (M-CSF)
- Platelet derived growth factors (PDGF)
- Vascular endothelial growth factor (VEGF)
- Hepatocyte growth factor -α (HGF-α)
- HGF-β
- Tumor necrosis factor-α
 - Interferon-γ
- Epithelial growth factor (EGF)
- Transforming growth factor-α (TGF-α)
- TGF-β1
- TGF-β2
- Insulin-like growth factor-I (IGF-I) (also known as somatomedin C)
- Insulin-like growth factor- II
- Nerve growth factor (NGF)
- Erythropoietin

PEPTIDES

(combinations of amino acids)

- HMGF I (Human growth factor)
- HMGF II
- HMGF III
- Cholecystokinin (CCK)
- β-endorphins
- Parathyroid hormone (PTH)
- Parathyroid hormone-related peptide (PTHrP)
- β-defensin-1
- Calcitonin
- Gastrin
- Motilin
- Bombesin (gastric releasing peptide, also known as neuromedin B)
- Neurotensin
- Somatostatin

HORMONES

(chemical messengers that carry signals from one cell, or group of cells, to another via the blood)

- Cortisol
- Triiodothyronine (T3)
- Thyroxine (T4)
- Thyroid stimulating hormone (TSH) (also known as thyrotropin)
- Thyroid releasing hormone (TRH)
- Prolactin
- Oxytocin
- Insulin
- Corticosterone
- Thrombopoietin
- Gonadotropin-releasing hormone (GnRH)
- GRH
- Leptin (aids in regulation of food intake)
- Ghrelin (aids in regulation of food intake)
- Adiponectin
- Feedback inhibitor of lactation (FIL)
- Eicosanoids
 - Prostaglandins (enzymatically derived from fatty acids)
 - PG-E1
 - PG-E2
 - PG-F2
 - Leukotrienes
 - Thromboxanes
 - Prostacyclins

ENZYMES

(catalysts that support chemical reactions in the body)

- Amylase
- Arylsulfatase
- Catalase
- Histaminase
- Lipase
- Lysozyme
- PAF-acetylhydrolase
- Phosphatase
- Xanthine oxidase

substances supporting microbiota

ANTIPROTEASES

(thought to bind themselves to macromolecules such as enzymes and as a result prevent allergic and anaphylactic reactions)

- a-1-antitrypsin
- a-1-antichymotrypsin

ANTIMICROBIAL FACTORS

(are used by the immune system to identify and neutralize foreign objects, such as bacteria and viruses.)

- Leukocytes (white blood cells)
 - Phagocytes
 - Basophils
 - Neutrophils
 - Eosinophils
 - Macrophages
 - Lymphocytes
 - B lymphocytes (also known as B cells)
 - T lymphocytes (also known as C cells)
- slgA (Secretory immunoglobulin A) (the most important anti-infective factor)
- IgA2
- IgG
- IgD
- IgM
- IgE
- Complement C1
- Complement C2
- Complement C3
- Complement C4
- Complement C5
- Complement C6
- Complement C7
- Complement C8
- Complement C9
- Glycoproteins
 - Mucins (attaches to bacteria and viruses to prevent them from clinging to mucosal tissues)
 - Lactadherin
 - Alpha-lactoglobulin
 - Alpha-2 macroglobulin
 - Lewis antigens
 - Ribonuclease
 - Haemagglutinin inhibitors
 - Bifidus Factor (increases growth of Lactobacillus bifidus - which is a good bacteria)
 - Lactoferrin (binds to iron which prevents harmful bacteria from using the iron to grow)
 - Lactoperoxidase
 - B12 binding protein (deprives microorganisms of vitamin B12)
 - Fibronectin (makes phagocytes more aggressive, minimizes inflammation, and repairs damage caused by inflammation)
 - Oligosaccharides (more than 200 different kinds!)

FORMULA

WATER

- CARBOHYDRATES
 - Lactose
 - Corn maltodextrin

PROTEIN

- Partially hydrolyzed reduced minerals whey protein concentrate (from cow's milk)

FATS

- Palm olein
- Soybean oil
- Coconut oil
- High oleic safflower oil (or sunflower oil)
- M. alpina oil (Fungal DHA)
- C.ohnii oil (Algal ARA)

MINERALS

- Potassium citrate
- Potassium phosphate
- Calcium chloride
- Tricalcium phosphate
- Sodium citrate
- Magnesium chloride
- Ferrous sulphate
- Zinc sulphate
- Sodium chloride
- Copper sulphate
- Potassium iodide
- Manganese sulphate
- Sodium selenate

VITAMINS

- Sodium ascorbate
- Inositol
- Choline bitartrate
- Alpha-Tocopheryl acetate
- Niacinamide
- Calcium pantothenate
- Riboflavin
- Vitamin A acetate
- Pyridoxine hydrochloride
- Thiamine mononitrate
- Folic acid
- Phylloquinone
- Biotin
- Vitamin D3
- Vitamin B12

ENZYME

- Trypsin

AMINO ACID

- Taurine
- L-Carnitine (a combination of two different amino acids)

NUCLEOTIDES

- Cytidine 5-monophosphate
- Disodium uridine 5-monophosphate
- Adenosine 5-monophosphate
- Disodium guanosine 5-monophosphate
- Soy Lecithin



WHO recommendation

up to term. 6th month of age
exclusive breastfeeding

up to 2 years of age and beyond
introducing local nutritious food
while breastfeeding

BMI - *body mass index*

Udržení vhodné tělesné hmotnosti je základem zdravého života.

Nejjednodušším způsobem, jak se přesvědčit o tom, zda máme vhodnou tělesnou hmotnost, je výpočet indexu tělesné hmotnosti. Pro tento index se i u nás běžně používá jeho vžitý anglický název „BMI – body mass index“.

Vypočte se podle následujícího vzorce:

$$\text{BMI} = \text{váha [kg]} / \text{výška}^2 \text{ [m]}$$

	hodnota BMI	stupeň nadváhy	zdravotní rizika
	nižší než 20	podváha	podvýživa
	20 - 25	norma	minimální
	25 - 30	nadváha	nízká až lehce zvýšená
	30 - 40	obezita	vysoká
	vyšší než 40	těžká obezita	velmi vysoká

WHR – *waist/hip ratio* (poměr pas/boky)

Důležité je i rozložení tuku v těle. Převaha ukládání tuku v břišní krajině (centrální typ, připodobňovaný k jablku), které je typické pro muže, je rizikovější než ukládání tuku v krajině hýždí a boků (periferní typ, připodobňovaný k hrušce), které je typické pro ženy.

Výpočet je jasný z názvu:

$$\text{WHR} = \text{obvod v pase} / \text{obvod v bocích}$$

Na rizikový, centrální typ ukládání tuku v těle poukazuje poměr:

Ženy	Vyšší než 0,85	
Muži	Vyšší než 1,00	

Obvod pasu

Jednodušším ukazatelem, který svědčí o rizikovém ukládání tuku v těle, je obvod pasu:

	Zvýšené riziko	Vysoké riziko
Ženy	Vyšší než 80 cm	Vyšší než 88 cm
Muži	Vyšší než 94 cm	Vyšší než 102 cm

10 KROKŮ K PEVNÉMU ZDRAVÍ

1. Jezte vyváženou pestrou stravu založenou více na potravinách rostlinného původu.
2. Udržujte svou hmotnost a obvod pasu v doporučeném rozmezí (v dospělosti BMI 18,5 – 25; obvod pasu u mužů ne více než 94 cm, u žen ne více než 80 cm). Pravidelně se věnujte pohybové aktivitě (ochranný účinek na zdraví má například 30 minut, lépe však 1 hodina, nepřetržitě rychlé chůze denně).
3. Jezte různé druhy ovoce a zeleniny, alespoň 400 g denně, přednostně čerstvé a místního původu.
4. Kontrolujte příjem tuků, snižte spotřebu potravin s jejich vysokým obsahem (např. uzenin, tučných sýrů, čokolád, chipsů). Dávejte přednost rostlinným olejům před živočišnými tuky. Denně konzumujte mléko nebo mléčné výrobky se sníženým obsahem tuku.
5. Několikrát denně jezte chléb, pečivo, těstoviny, rýži nebo další výrobky z obilovin (zejména celozrnné) a brambory.
6. Nahrazujte tučné maso a masné výrobky rybami, luštěninami a netučnou drůbeží.
7. Pokud pijete alkoholické nápoje, vyvarujte se jejich každodenní konzumaci a nepřekračujte denní dávku 20 g alkoholu (tj. 0,5 l piva nebo 2 dcl vína nebo 5 cl 40% destilátu).
8. Omezujte příjem kuchyňské soli, celkový denní příjem soli nemá být vyšší než 5 g (1 čajová lžička), a to včetně soli skryté v potravinách. Používejte sůl obohacenou jódem.
9. Vybírejte potraviny s nízkým obsahem cukru, omezujte sladkosti. Sladké nápoje nahrazujte dostatečným množstvím nesladkých nápojů, např. vody.
10. Podporujte plné kojení do ukončeného 6. měsíce věku, poté kojení s příkrmem do 2 let věku dítěte i dále.

Připravila pracovní skupina pro návrhy postupů k implementaci Globální strategie pro výživu, fyzickou aktivitu a zdraví. Vydalo Ministerstvo zdravotnictví v rámci dotačního programu Národní program zdraví – projekty podpory zdraví 2005

Vytiskl Jiří Bílek – GEOPRINT, Krajinská 1110, Liberec
vydání Praha 2005

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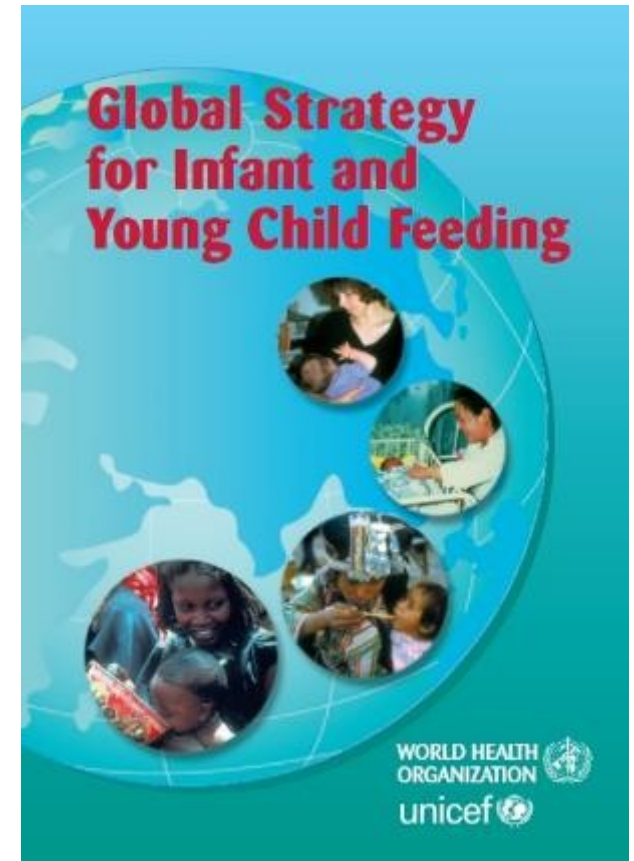
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VÝŽIVOVÁ DOPORUČENÍ
PRO OBYVATELSTVO ČR



Other recommendations

- European Code Against Cancer (2014)
 - *Breastfeeding lowers the risk of cancer in mothers. Breastfeed your child, if possible.*
- WHO
 - *Breastfeeding is the most effective way for child health protection and support.*
- opinion of alergologists*
 - *The most effective prevention of food allergies is exclusive breastfeeding for 4–6 months.*



*Pracovní skupina dětské gastroenterologie a výživy. Doporučení pracovní skupiny gastroenterologie a výživy ČPS pro výživu kojenců a batolat. *Česko-slovenská pediatrie*. 2014, roč. 69, č. S1, s. 12-13. ISSN 0069-2328.

Risks rise when not breastfeeding

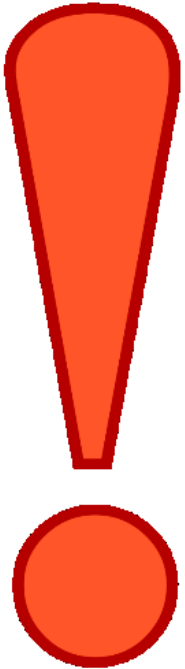
- **child**

- otitis media
- gastroenteritis
- atopic dermatitis
- severe infection of LRT
- necrotic enterocolitis
- SIDS
- obesity
- T1 and T2 diabetes mellitus
- asthma
- leukaemia

- **mother**

- postpartum depression
- T2 diabetes mellitus
- mammal and ovarian tu

Source: International Code of Marketing of Breast-Milk Substitutes



**higher expenses for
healthcare**

**negative
environmental impact**

Official breastfeeding support

WHO, UNICEF:

- **1981** – International Code of Marketing of BM Substitutes
- **1991** – Baby-friendly Hospital Initiative
 - Ten Steps to Successful Breastfeeding (WHO, UNICEF)

CZ:

- **2007** – Standard practical instructions for BF in CZ (upgr. **2015**)

International Code of Marketing of BM Substitutes

„(...) first choice closest to natural breastfeeding.“

*„(...) bottle for breastfed children
Preserves natural way of sucking
in breastfeeding (...) facilitates
switching from the breast
bottle and back (...)“*

*„(...) if you decide to feed from
the bottle, you will have two
main advantages against
breastfeeding mothers. First,
you don't have to feed the
child alone (...) second, you will
know how much milk has your
child drunk.“*

International Code of Marketing of BM Substitutes

- 1979 – congress of WHO, UNICEF, government delegates and producers of BM substitutes – **approved 1981**
- recommended to incorporate into legislation
- aim – to contribute to adequate and safe infant nutrition through **support and protection of BF against inappropriate marketing of BM substitutes, bottles and pacifiers**
- **in CZ it's not a part of legislation (not obligatory)**

Arrangements of the Code

- No public promotion of these products
- No free samples for mothers
- No promotion in healthcare facilities
- No consultants employed by the producers consulting mothers
- No presents or free samples for healthcare providers
- No text or images idealizing artificial nutrition, including images of children on the packaging



Arrangements of the Code

- Information for healthcare providers should be evidence-based and true
- All information about infant formula including labels, should point to the benefits of breastfeeding, the cost of infant formula and its risks
- Inappropriate products, eg. sweetened condensed milk, should not be promoted as appropriate for children
- All products should be in high quality and take into account climatic and storage conditions of the country

Remember:

Breast milk substitutes
should always be used as the
last alternative!

Optimally in indicated cases only.

Baby-friendly Hospital Initiative (BFHI)

- initiative of WHO and UNICEF (1991)
- worldwide effort to protect, support and promote breastfeeding
- in CZ **65 out of 96 maternity hospitals**
- recertification every 5 years

- facility has to meet the criteria:
 - **„10 steps to successful breastfeeding“**

! rev. 2017 !

Seznam BFHI nemocnic v ČR:

<http://www.kojeni.cz/maminkam/bfh/seznam-bfh-nemocnic/>

Breastfeeding until 6 months

Long-term breastfeeding in CZ 2013 (in %)	
6 weeks	80,3
3 months	63,7
6 months	38,6
Exclusive breastfeeding	
6 weeks	27,5
3 months	15,3
6 months	Not observed

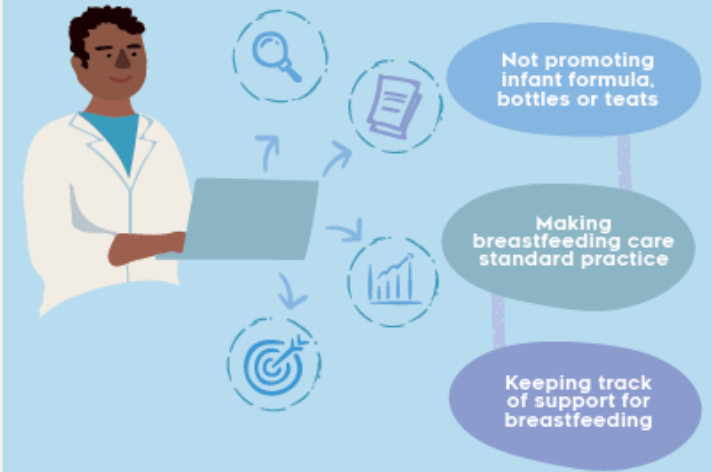
10 steps to successful breastfeeding



The TEN STEPS to Successful Breastfeeding

1 HOSPITAL POLICIES

Hospitals support mothers to breastfeed by...



2 STAFF COMPETENCY

Hospitals support mothers to breastfeed by...



3 ANTENATAL CARE

Hospitals support mothers to breastfeed by...



4 CARE RIGHT AFTER BIRTH

Hospitals support mothers to breastfeed by...



5

SUPPORT MOTHERS WITH BREASTFEEDING

Hospitals support mothers to breastfeed by...



Checking positioning, attachment and suckling

Giving practical breastfeeding support

Helping mothers with common breastfeeding problems

6

SUPPLEMENTING

Hospitals support mothers to breastfeed by...

Giving only breast milk unless there are medical reasons

Prioritizing donor human milk when a supplement is needed

Helping mothers who want to formula feed to do so safely



7

ROOMING-IN

Hospitals support mothers to breastfeed by...

Letting mothers and babies stay together day and night

Making sure that mothers of sick babies can stay near their baby



8

RESPONSIVE FEEDING

Hospitals support mothers to breastfeed by...



Helping mothers know when their baby is hungry

Not limiting breastfeeding times

9

BOTTLES, TEATS AND PACIFIERS

Hospitals support mothers to breastfeed by...



Counsel mothers on the use and risks of feeding bottles, teats, and pacifiers



10

DISCHARGE

Hospitals support mothers to breastfeed by...



Referring mothers to community resources for breastfeeding support

Working with communities to improve breastfeeding support services

Skin-to-skin

- immediately after the birth skin-to-skin contact of the child and its mother for at least one hour
- for all mothers after vaginal labour or section without anaesthesia (except medically argued cases)
- **give enough time to the mother and child**
- support mothers to learn the signals of their child showing to be ready to be breastfed and offer help to mothers in case of need.
- not force the child to the breast but help when the child is ready





Support of the mothers

- pay attention to the mothers, who faced breastfeeding problems in the past
- teach the mothers:
 - breastfeeding positions
 - how to latch on the child (describe it, demonstrate it)
 - how to express the milk
- help with the breastfeeding during first 6 hours after the labour (position, latching on, drinking...)
- it's necessary to breastfeed or express the milk at least 8 times within 24 hours for good milk production

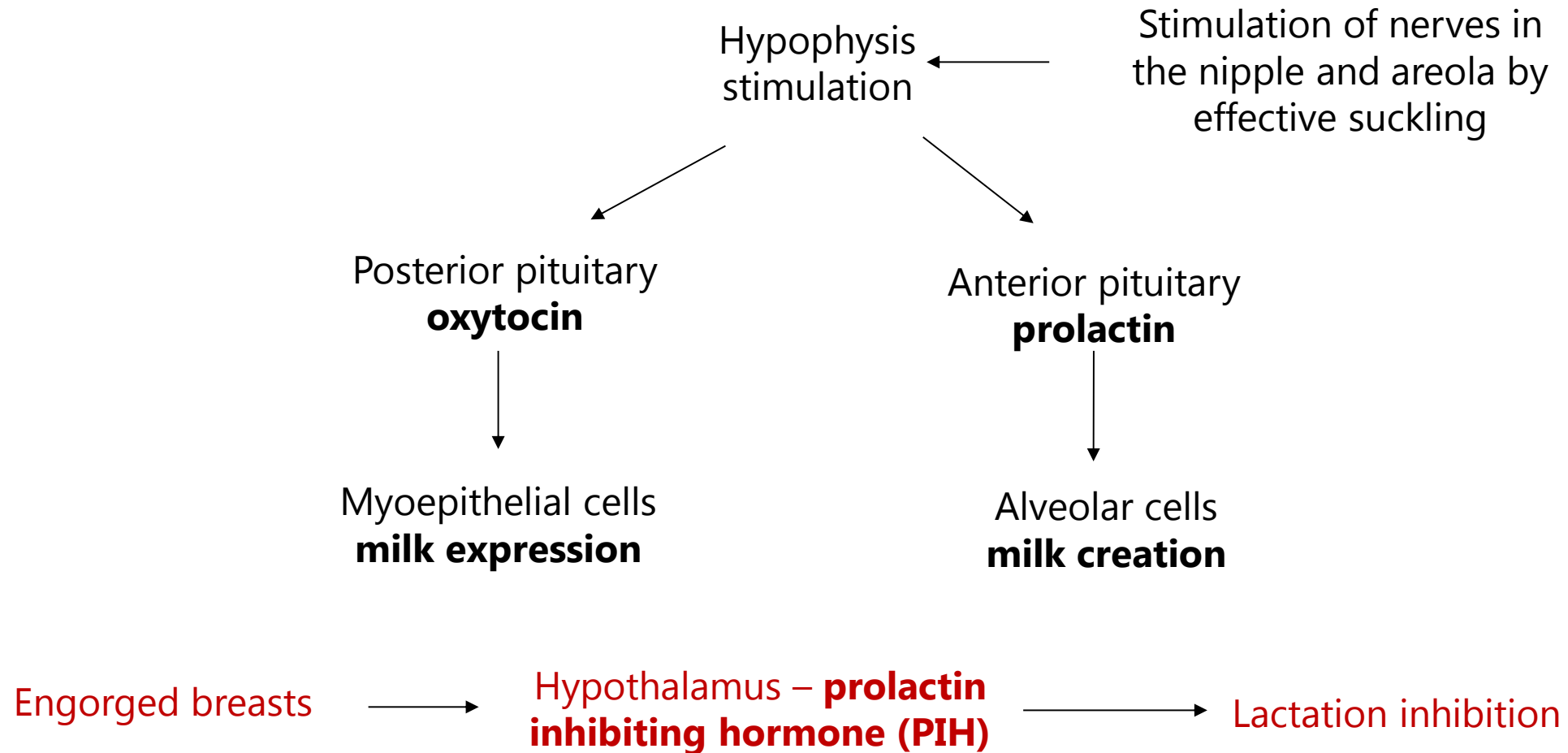


Support of the mothers

- teach the mothers how to identify their child is showing its will to be breastfed
- the mothers should know at least 2 signals (turning head, opening mouths, the effort to suck the hand or finger etc. , sucking movements, dissatisfaction, the face pointing to crying...
- **advise mothers to breastfeed as often and as long as the child wishes**



Lactation physiology



Childhood hygiene

Breastfeeding support

Four points for breastfeeding support

- right position
- right suckling
- pause in the chin
- breast pressing



Right position

- Mother is pulling the child towards the breast with the whole forearm
- Mother should feel comfortable – no back or shoulder pains
- Transversal position (position of the dancer) is the easiest for most mothers and it provides the child with most milk



Right position



Childhood hygiene

Breastfeeding support

Right position

- mother pushes the child with her forearm (the child is on the forearm)
- palm of the hand is under the cheek of the child
- mother touches the upper lip of the child with her nipple, from one side of the mouth to the other
- she waits for the child opening its mouth wide and pulls it right to the breast
- she encloses the child with the whole arm
- elbow pushes the buttocks, wrist pushes between the scapulae – the child slightly tilts the head back (chin touches the breast, the nose not)
- there is no obstacle between mother and child



Right transversal position



- child is on the forearm
- child is tilted upwards
- body keeps a line
- mother's fingers are under the child's cheek



- mother pushes the child's buttocks with her elbow
- mother pushes the child's scapulae with her wrist

Childhood hygiene

Breastfeeding support

Right suckling



the child only holds the nipple with its lips



the child is suckling right

Right suckling

- mouth is open wide
- tongue reaches at least the lower lip
- chin **is** touching the breast
- nose **isn't** touching the breast
- child covers more of the areola with its lower lip than with the upper – areola is more visible above the upper lip
- cheeks don't collapse inside while breastfeeding



Right suckling



Childhood hygiene

Breastfeeding support

Pause in the chin

- monitoring of the suckling
- checking if the child gets the milk
- **nutritive and non-nutritive suckling**
- <https://www.youtube.com/watch?v=-erpc0vLbm4>

How big is baby's stomach?



Day 1

Size of a cherry
5 - 7 ml
0.1 - 0.2 oz



Day 3

Size of a walnut
22 - 27 ml
0.8 - 1 oz



Day 7

Size of an apricot
45 - 60 ml
1.5 - 2 oz



Day 30

Size of a large egg
80 - 150 ml
2.5 - 5 oz

Breast pressing

- prevents the baby from falling asleep by getting the milk to it – the milk is pouring faster



Rooming-in

- The child is in the same room and bed with its mother
- No separation (only from excusable reason)
- „Mother needs to rest after the labour.“ yes, but with her child
- If there is not a medicaly indicated reason, start with rooming-in immediatelly after the labourt



Contraindications of breastfeeding

- **health conditions**
 - galactosemia
 - children of mothers with HTLV I and HTLV II (human T-lymphotropic virus)
 - children of mothers with HIV/AIDS
 - *children with PKU can be partially breastfed*
- **temporary contraindications** (solution: regular squirting)
 - squirted milk can be given to child, e.g. active TBC
 - radioactive isotope treatment – interruption of BF for 5 times the $t_{1/2}$ of the isotope
- **incorrect contraindications**
 - hepatitis B and C of the mother, allergies of the child, diarrhoea of the child, fever and cold of the mother, diarrhoea of the mother
- **medicaments** – almost everything can be treated with drugs compatible with breastfeeding

What you as doctors should know

(suitable for self-study)

- How to treat aching nipples?
- How to treat failure to thrive?
- How to treat mastitis or blocked milk ducts?
- How to treat candidosis?
- How to treat failure to thrive following after previous thrift?
- How to treat milk refusal in a child?

PAUSE

5 min

Infant and toddler nutrition

Complementary food



**When to start with complementary feeding?
Is it necessary to terminate breastfeeding?**

WHO recommendation

up to term. 6th month of age
exclusive breastfeeding

up to 2 years of age and beyond
introducing local nutritious food
while breastfeeding

When to start?

- the child is **mature enough** to eat
- breast milk is **no longer sufficient** to cover the child's needs

WHO recommendation is always the priority.

- if the child fails to thrive before compl. 6th month – **lactation** support → **non-milk** complementary food → breast milk **substitute**
 - not before completed 4th month
- children **born prematurely** (before 35th week)
 - not before completed 3rd month of adjusted age

Introduction of complementary food

- **diversity** – gradually add new tastes
- let the child **use its hands, feed „on its own“**, but **w/o force**
- gradually **soft bites** – rather cut than mashed
- deeper heavier bowl, working with a **spoon**
- after 10th month liquids **in a cup**
- regular **dietary regimen**
- autonomy, but not without supervision
- **collective dining** – habits

Potential allergens introduction (MZ ČR)

- in children with high risk of allergy only **one new type of food at a time**
 - gradual introduction, observing the reaction
 - together with breastfeeding, higher antigen tolerance
 - **not before compl. 6th month** – early contact with the allergen doesn't overcome the benefits of exclusive breastfeeding
- concerning allergies, gluten **no later than in 7th month** together with BF
 - ESPGHAN – timing has no effect on the incidence of **coeliac disease**
- **Ministry of Health recommendation vs. opinion of allergologists**
 - *The most effective prevention of food allergies is exclusive breastfeeding for 4–6 months.*

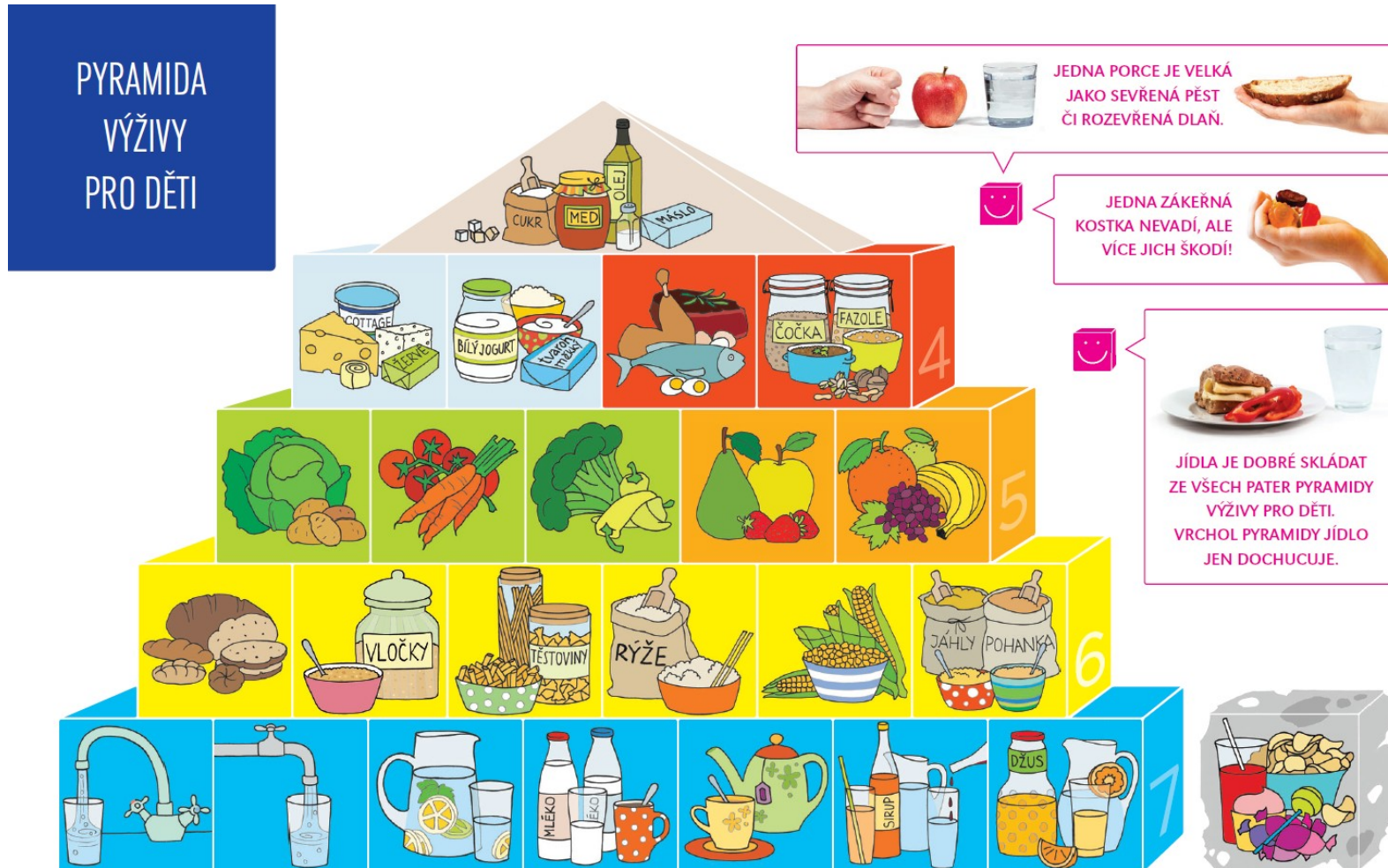
Beware

- **insoluble** small bits of food
- **milk shouldn't be given as a drink**, proteins shouldn't be covered only from dairy sources (Fe)
- **low-fat products** shouldn't be given – the child needs food of high energy density and low volume (fats make 45 % of energy)
- **sweets**, snacks
- **not to add sugar or salt**

Role of the parents

- feed the child **slowly and patiently**
 - react to the signs of **hunger and satiety**
 - various **combinations, tastes, textures**
 - **help** the child to learn – beware of negative examples
-
- feeding – **relationship**

Nutrition after 2 years of age



Risk nutrient – iron

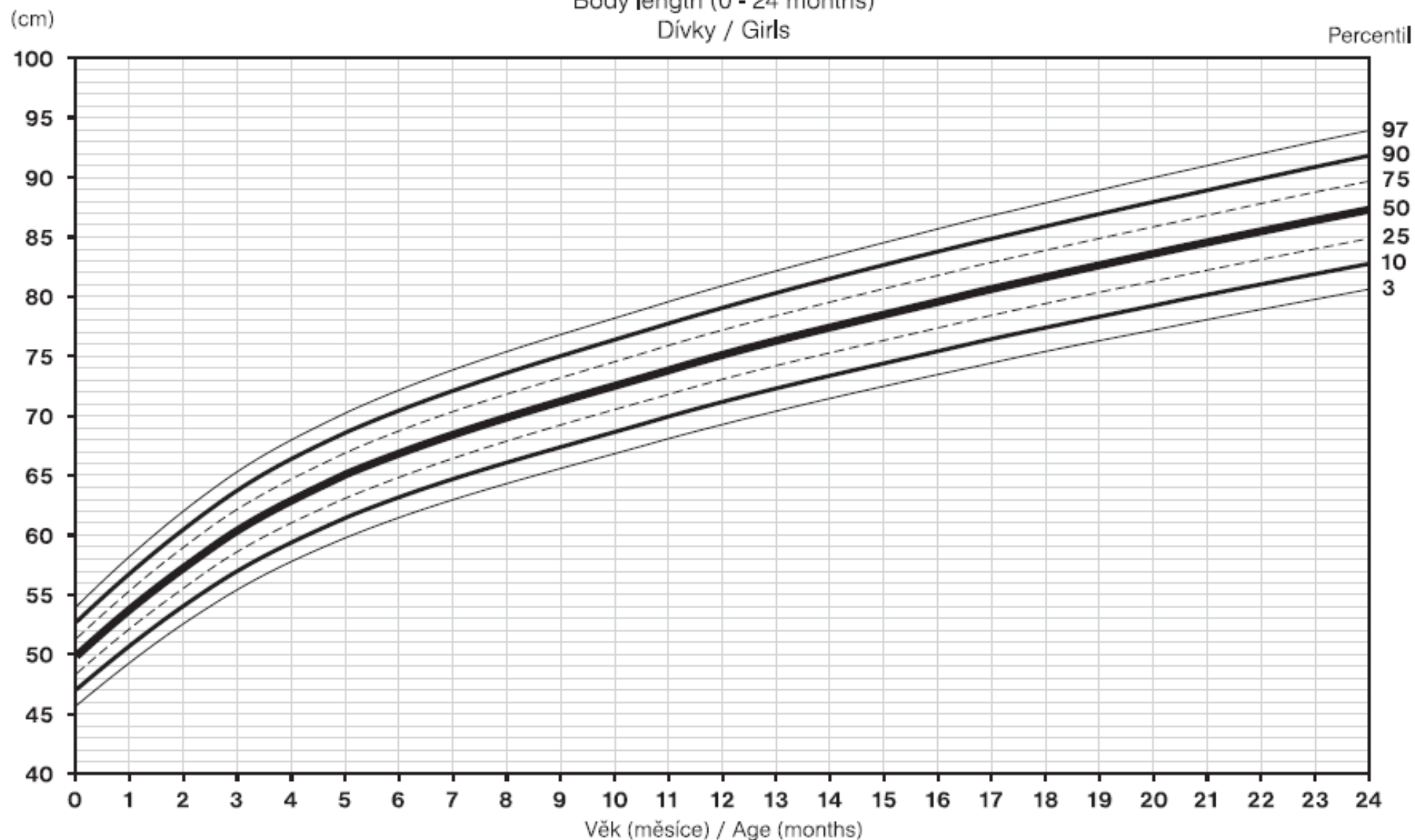
- often insufficient intake
- other sources of protein than dairy products **shouldn't be omitted**
- **iron** in different food groups
 - cereals – e.g. porridge (mainly oats)
 - meat – red meat, intestines (liver) – **meat factor**
 - seeds, legumes (appropriately processed)
 - **fruits and vegetables – vitamin C**

Growth charts

Tělesná délka (0 - 24 měsíců)

Body length (0 - 24 months)

Dívky / Girls



What are they for?

- **growth examination** by GP
- **underweight/overweight** classification in children
- alert that „**something is happening**“

- **charts available in CZ**
 - height, weight, weight/height ratio, BMI
 - circumferences – hips, waist, head, arm
 - skinfolds – biceps, triceps, thigh, subscapular, suprailiacal, 2-skinfold sum, 4-skinfold sum

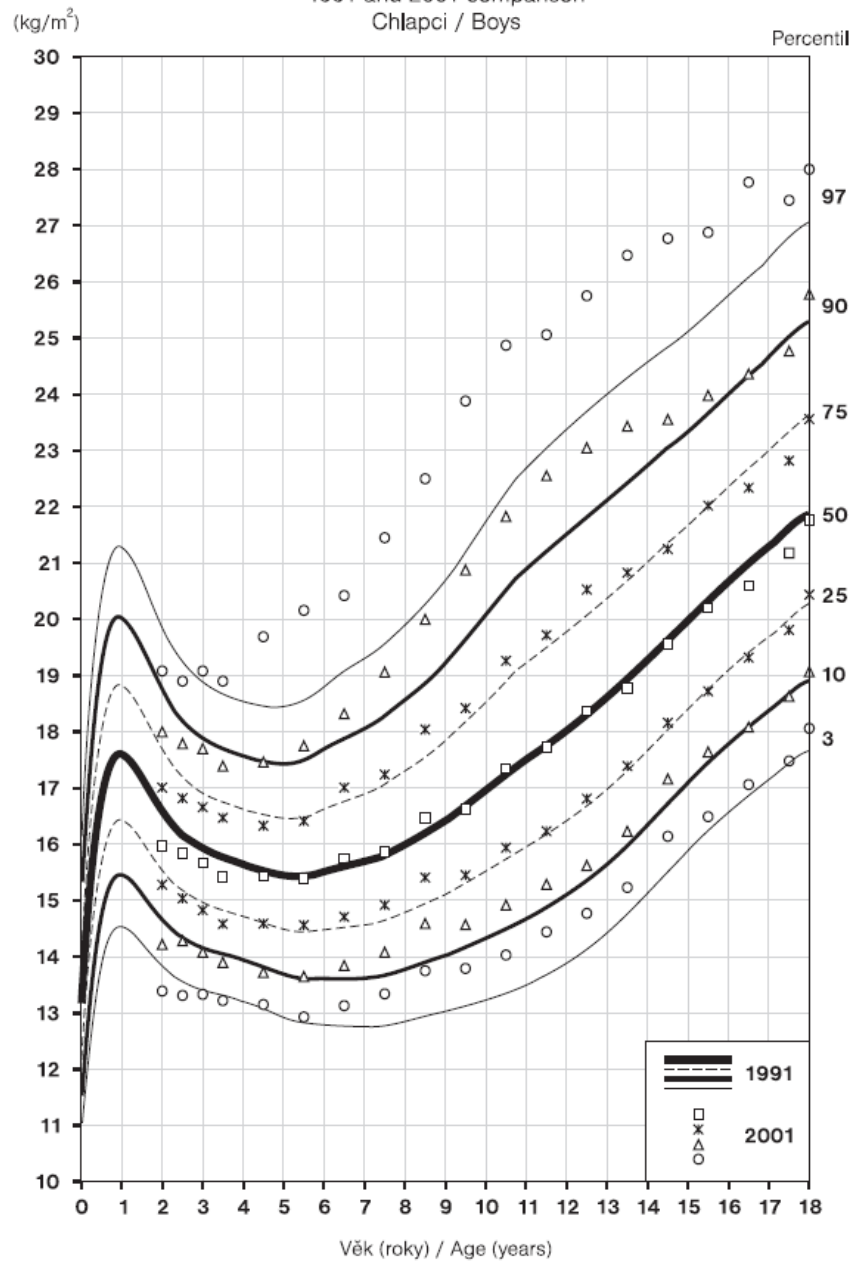
How are they made?

- **nationwide anthropometric survey (CAV)**
 - **CAV 2001** – most up-to-date data
 - **CAV 1991** – charts regarding weight

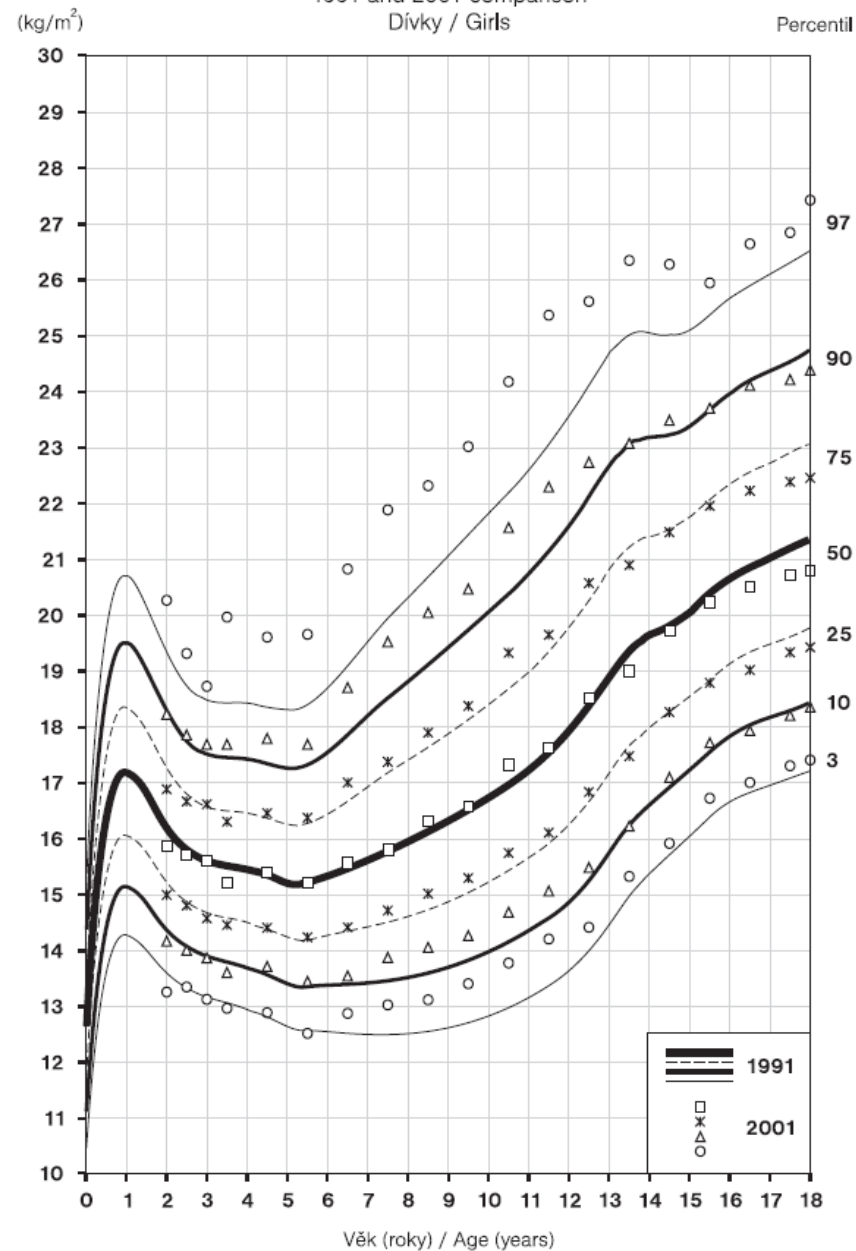


Why do we use weight and BMI charts from 1991?

Body Mass Index (BMI)
Porovnání 1991 a 2001
 1991 and 2001 comparison
 Chlapci / Boys



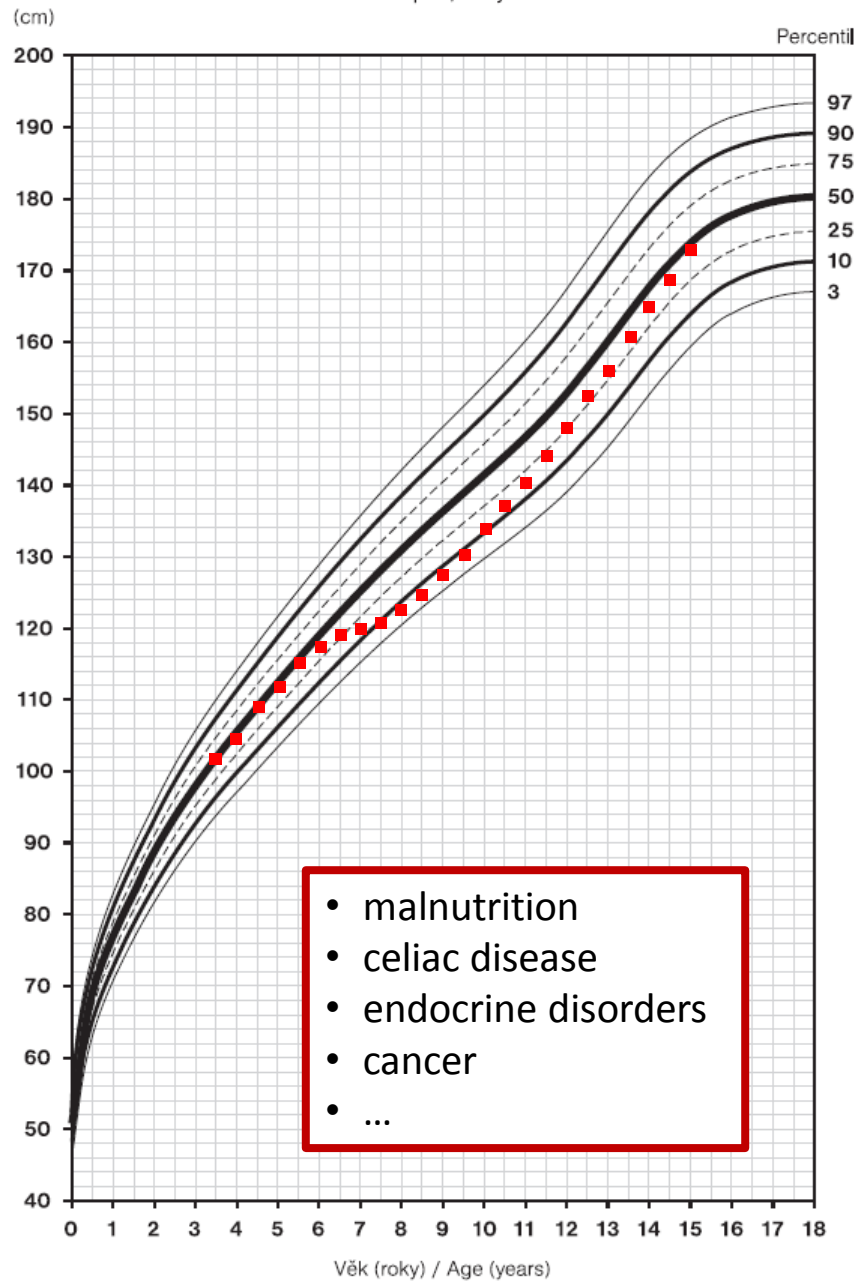
Body Mass Index (BMI)
Porovnání 1991 a 2001
 1991 and 2001 comparison
 Dívky / Girls



Tělesná výška (0 - 18 roků)

Height (0 - 18 years)

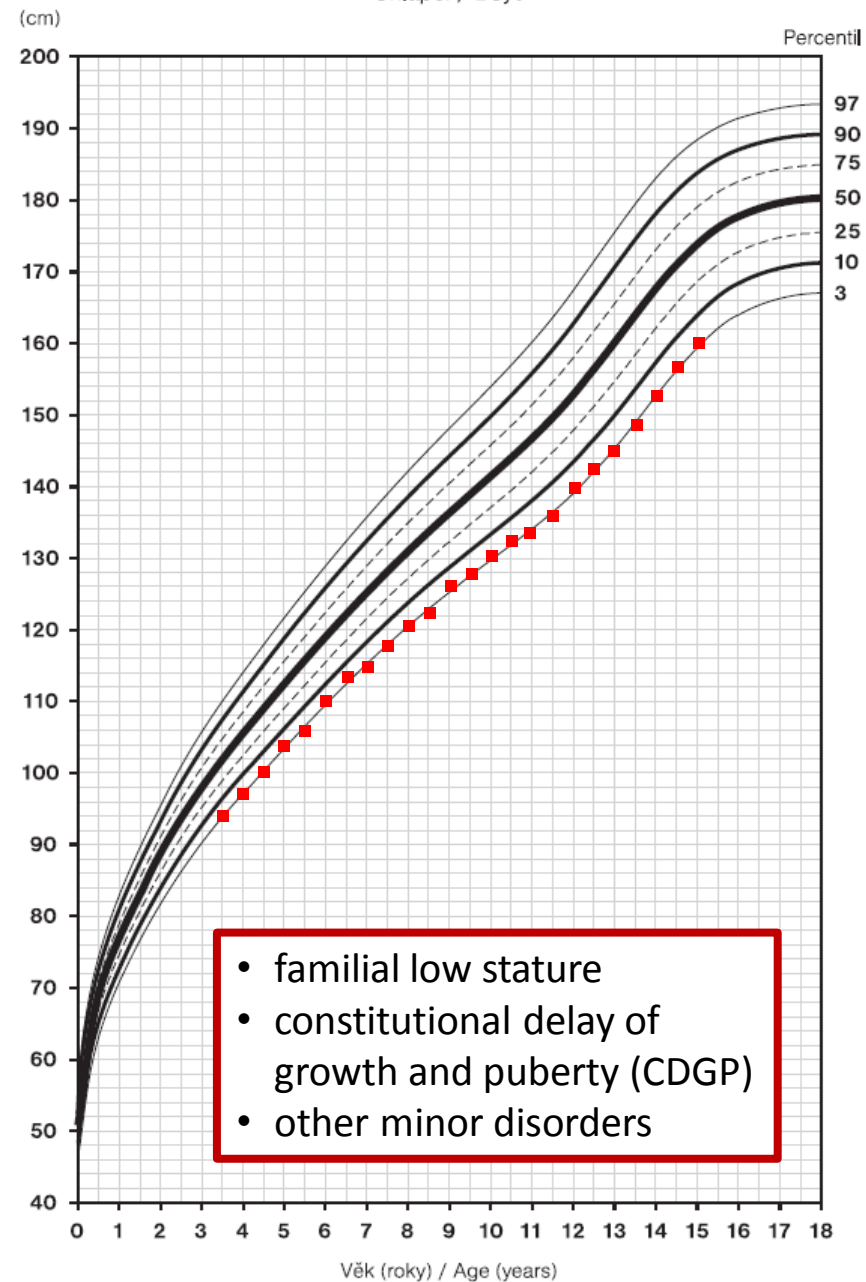
Chlapci / Boys



Tělesná výška (0 - 18 roků)

Height (0 - 18 years)

Chlapci / Boys



Good utility, not a pattern!

- **think** when you use the charts
- a child high for his age – weight will be **higher**
 - assess rather **weight/height** or **BMI** (in older children)
- a child with family history of low statures – will be **smaller**
 - keep **other factors** in mind



What do we know from only one point on the chart?

Exclusively breastfed children

- exclusively BF children slightly „delayed“ in Czech charts
- physiologically **slower growth and weight gain**
 - graphs created according to the data of breastfed children + children fed breast milk substitutes

Complementary food or substitutes shouldn't be given only because of slight delay of exclusively breastfed children against the growth chart!

Assessment of the weight of a child

Percentile area	Assessment
> 97	obese
90–97	overweight
75–90	stocky
25–75	proportional
10–25	lean
< 10	underweight

Exercise

- boy, 12 y.o., 156 cm
- girl, 10 y.o., 140 cm, 44 kg
- girl, 10 y.o., 156 cm, 44 kg
- boy, 13 m.o., 73 cm, 9 kg
- boy, 13 m.o., 79 cm, 10 kg



In CZ, does GP have to monitor weight and height of a child?

In CZ, does GP have to use growth charts for this monitoring?

If the child is proportional, does it mean its nutrition is alright?

Further information

- **webpage of National Health Institute + RustCZ**
 - <http://www.szu.cz/publikace/data/program-rustove-grafy-ke-stazeni>
- **growth charts for download**
 - <http://www.szu.cz/publikace/data/seznam-rustovych-grafu-ke-stazeni>

Introduction to social pediatrics

Social pediatrics

- social aspects of health
- healthy development, child's needs
- promoting the best interests and right of the child

- **Declaration of the Rights of the Child (1989)**
- **World Declaration on the Survival, Protection and Development of Children (1990)**

Focus of social pediatrics

- chronically ill children
- children with a handicap
- family environment quality and its impact on child's health
- abandoned, orphaned children, spare family care
- toxicomania, childhood criminality, socially maladaptive children
- social impacts of illness and health impairment for the child, family and society
- threatened children, CAN sy, criminal acts committed on children

Risk groups of children



Risk groups of children

- children born **prematurely**, with **inborn errors of development**, with **complications**
- **unwanted** children – lack of interest, negligence, abuse, killing
- **dispensarized** children – sense impairment, chronic illness
- **adolescents** – mainly behavioral problems
- children from **socially/culturally disadvantaged environment**
 - environment preventing the child from full development of its potential, capabilities and skills

Risk groups of children

- **socially/culturally disadvantaged environment**
 - parents too young (mainly underage mother)
 - incomplete primary education of one of the parents
 - chronic or psychiatric illness of one of the parents
 - insufficient social integration of the parents (language etc.)
 - home violence
 - addictive substances in the family
 - legitimate investigation of the child protection authority

Why are they at risk?

- **factors with an impact on health:**
 - genetics
 - environment
 - healthcare system
 - lifestyle
 - social aspects
 - social differences and inequalities in health
 - social disadvantage and cultural differences
 - unemployment, poverty

Social aspects can have a huge impact on child's health!

Think about it...

- what is the role of a pediatrician in social pediatrics?



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