



Primary Pediatric Care in Czech Republic

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Primary care

- First line Health Care Service – first line contact of physician and patient
- Therapeutic and preventive care in Primary Care Medical Office



Primary Care Medical Specialisations in Czech Republic

- GP - for adult patients
- Primary pediatricians - (praktické lékařství pro děti a dorost - PLDD)
(currently cca 2100, who register about 20 % of czech population $\leq 19y$.)
- Stomatology
- Gynecology

Organization of Pediatric Primary care in Europe



- Pure Paediatric primary care
- GP 's Primary care system
- Mixed system of primary care (patchwork)

Who is primary care pediatrician?

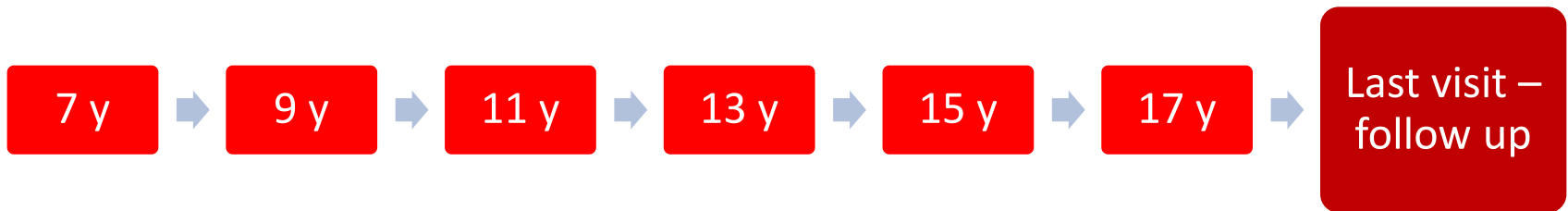
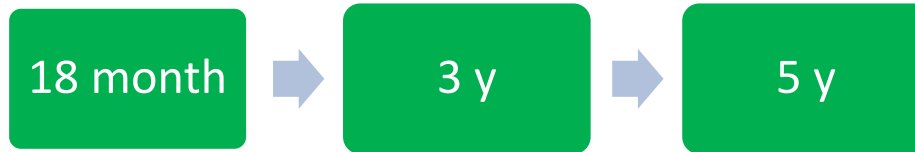
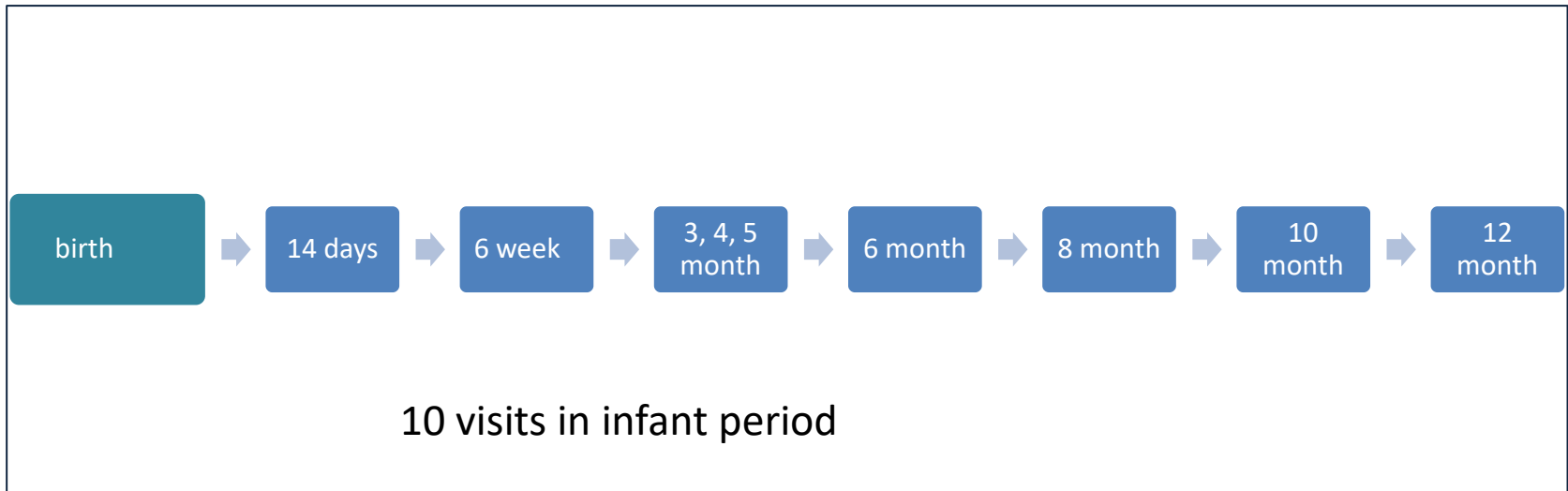
- Pediatrician, providing care for children 0 – 19 years of age, based on registration
- Provides
 - Therapeutic procedures
 - Complex preventive care incl. vaccination
 - Medical advises
 - „Health promotion“
(prevention of hazardous behavior, job selection, nutrition and life style, obesity prevention)

Preventive care in pediatric office

According to the legislation

- **Somatic development**
- **Psychomotoric, social development**
- **School maturity** - ability and behavior disorders
- **Health promotion** - prevention of civilisation diseases, of hazardous behavior and abuses
- **Medical counseling**- school, job, nutrition

Preventive primary care schedule



What does the preventive exam investigate?

Screening of deviations in somatic development

Early recognition of pathologic findings (inborn and acquired)

Screening of deviations in psychomotoric development

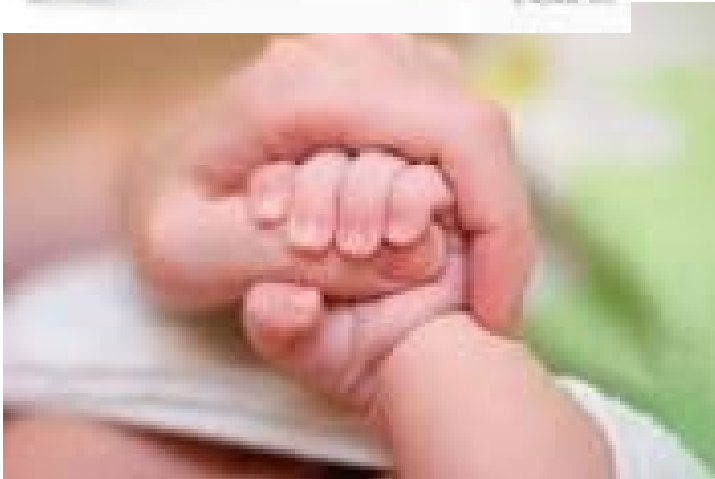
Prevention of civilisation diseases, of hazardous behavior and abuses

Medical counseling- school, job, nutrition

Preventive examination of neonate

- Optimally at home till 48 hours after discharge
- Evaluation of gravidity, family and perinatal history
- Physical examination
- Evaluation of psychomotoric development
- Double check –vitamine K, neonatal screening, TBC risk, TOAE
- Psychoterapeutic intervention, lactation support

Neonatal reflexes



Neonatal screening - 2023

- Lab screening – 3rd-4th day -capillary drop of blood from the heel
- **20 diseases (2022)** www.novorozeneckyskrining.cz
 - Inborn errors of metabolism
 - amino acid metabolism, fatty acid oxidation disturbances and biotinidase deficiency
 - Cystic fibrosis (CF)
 - Congenital hypothyreosis (CH)
 - Congenital adrenal hyperplasia (CAH)
 - **Spinal Muscular Atrophy SMA**
 - **Severe Combined Immunodeficiency (SCID)**
- Cataract screening
- Hearing loss screening
- Ultrasound screening of hips dysplasia

Screening of hearing loss I.



Transiently evoked otoacoustic emissions (**TEOAE**)

Screening of hearing loss II.

- Permanent hearing damage 1-2/1000 neonates
- 2nd-4th day of life
- 1-4% false positive findings – second check → ENT phoniatory BERA
- In the case of permanent hearing disorder – therapy with hearing aid till 6 months of age

CAVE ! Early screening doesn't exclude later hearing disorder

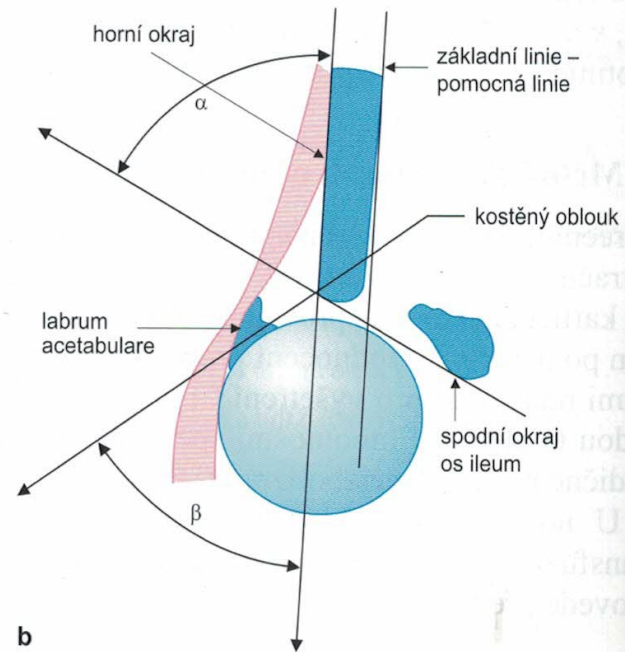
Hip dysplasia - ultrasound screening

- Paediatric orthopedist
- First examination till 3rd-4th week of age
- Follow -up exams until the developmental dysplasia is excluded and ossification starts
(3-6 months)
- Classification, Graf I.-IV.

Hip dysplasia



Typ I



Typ I Graf clasification

Sonographic hip types (Graf and Gross description)

Type	α angle	β angle	Description
I	$> 60^\circ$	$< 55^\circ$	Mature
IIa	$50^\circ - 60^\circ$	$55^\circ - 77^\circ$	Physiologic immature (< 12 weeks)
IIb	$50^\circ - 60^\circ$	$55^\circ - 77^\circ$	Delayed of immature (> 12 weeks)
IIc	$43^\circ - 49^\circ$	$< 77^\circ$	Severe dysplasia
D	$43^\circ - 49^\circ$	$> 77^\circ$	Unstable, decented
III	$< 43^\circ$ / not measurable	$> 77^\circ$ / not measurable	Dislocated
IV	Not measurable	Not measurable	Dislocated

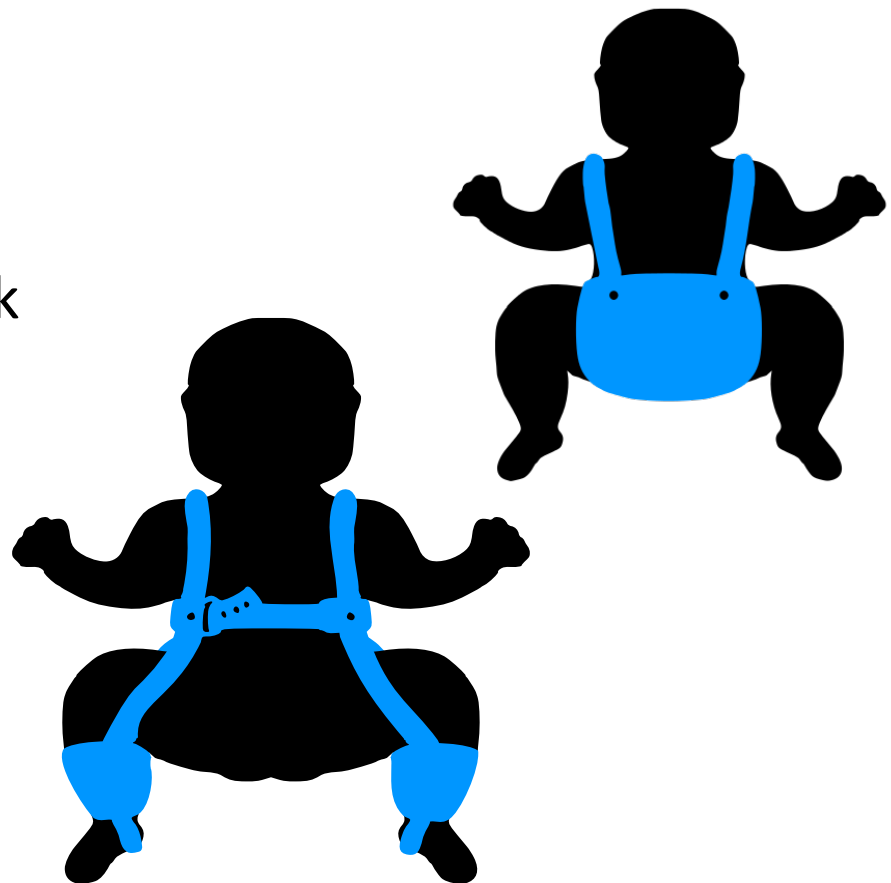
Hip dysplasia screening- therapy

Conservative therapy

- Abductive swaddling positioning
- Pavlíkovy stirrups and Frejk featherbed
- Distraction therapy

Operative

- Salter, Steel or Chiariho pelvic osteotomia

















Preventive exams of infants

- Evaluation of length, weight, growth of head
- Physical examination
- Evaluation of psychomotoric development
- Assessment of vision and hearing
- Diagnostic approach and psychoterapeutic intervention,
- Lactation support and dietetic consultation

Psychomotoric development of infants



Vývoj dítěte v prvním roce života

 <p>1. měsíc</p> <ul style="list-style-type: none"> - ruce jsou v pěst, končetiny pokrčené u trupu - nekoordinovaně pohybuje všemi končetinami - hlavu otáčí za světlem - na silně podněty reaguje trhnutím celého těla 	 <p>2. měsíc</p> <ul style="list-style-type: none"> - na břišku udrží zvednutou hlavu více jak 5 sekund - palec se uvolní z dlaně - pozorní při zvukovém podnětu - sleduje zrakem, krátce naváže optický kontakt a usměje se 	 <p>3. měsíc</p> <ul style="list-style-type: none"> - na břišku se opře o celé předloktí a uvolní dlaň - hlavou volně otáčí do stran a pozoruje předměty - má zájem o mimickou komunikaci - začíná broukat
 <p>4. měsíc</p> <ul style="list-style-type: none"> - prohlíží si obě ruce a hraje si s nimi - nohy zvedá vysoko nad podložku - začíná se převracet na bok - členě se otáčí za zvukem - vyžaduje kontakt a hlasitě se směje 	 <p>5. měsíc</p> <ul style="list-style-type: none"> - přitahuje se do sedu - převrací se na bok až na břiško - předává si hračky z ruky do ruky - rozeznává laskavý a přísný odstín řeči i mimiky 	 <p>6. měsíc</p> <ul style="list-style-type: none"> - na břiše se vzepře o dlaně, ruce jsou natažené, hlava vzpřímená - přetočí se oběma směry na břícho - na zádech uchopí palec u nohou - zvatlá jednotlivé slabiky
 <p>7. měsíc</p> <ul style="list-style-type: none"> - hraje si s nohama - na břiše se pokouší plazit - při posazení se v sedu udrží - začíná zdvojit slabiky 	 <p>8. měsíc</p> <ul style="list-style-type: none"> - posazeno samo sedí - začíná ležet po čtyřech - napodobuje zvuky a gesta 	 <p>9. měsíc</p> <ul style="list-style-type: none"> - samo se posadí - leze jistě po čtyřech - zkoumá prostor (vyhazuje hračky, vytahuje předměty ze zásuvek) - začíná uchopovat drobné předměty palcem a ukazovákem
 <p>10. měsíc</p> <ul style="list-style-type: none"> - s oporou se postává - začíná chodit úkroky kolem nábytku - rozumí jednoduchým pokynům - učí se dětské hříčky („paci paci“) 	 <p>11. měsíc</p> <ul style="list-style-type: none"> - stojí s oporou na celé plošce - chůze s držením za jednu ruku - podá a ukáže několik předmětů - první smysluplné slovo 	 <p>12. měsíc</p> <ul style="list-style-type: none"> - stojí bez opory - první samostatné kroky - učí se jíst samo lžičkou - používá dvě smysluplná slova

Milestones of psychomotoric development

1 month

- Prone positioning with head elevation few seconds

3 month

- Prone position fixed
- Start of gurgle

6 month

- Rotation from back to prone position to both sides
- Prone positioned with straight elbows

9 month

- Sitting position
- Crawling

12 month

- Standing position

18 month

- Walking



Toddlers age 1 – 3 years

- Self- awareness
- Development of speech
- Spontaneous intensive experience
- Neophobia
- Strong fixation on mother
(separation anxiety)
- Defiance, stubbornness (negativismus)
- Period of „phantasy“
- „Why, mom?“



18 months

Autism screening- M-Chat questionnaire

- Parents evaluation – early detection questionnaire for autistic disorders
- 20 questions (2,5,12 no)
- Middle risk (3-7 points) and high risk (8-20 points) repeat in 2 y.
- M-Chat Follow up

Preventive examination in 3rd year of age

- History
- Anthropometric parameters and physical
- **Blood pressure and urine examination**
- **Vision - ophotypes (pictures), hearing**
- Speech development
- Psychomotoric and psychosocial development
- (laterality, grafomotoric skills, knowledge of colors, cognitive skills, screening of autistic spectrum diorders)

Preventive examination in 5th year of age

- History, antropometric parameters and physical exam
- Evaluation of school maturity - ability
- Questionnaire on risk of cardiovascular diseases and total cholesterol levels in risk groups of patients
- Evaluation of hygienic skills (**focus on enuresis**)
- vaccination DTaP

Preventive examinations in school age children

- antropometric and physical exam + evaluation of sexual development
- regular vaccination + plan of voluntary vaccinations (HPV, meningococcus, tick-borne encephalitis, hepatitis A, varicella)
- Seeing, hearing, BP, urine, Learning disabilities
- **Chronic condition counseling** (sports, career choice)
- Prevention of risky behavior and obesity



Paediatric screening

Paediatric screening I.

- **Neonatal screening** (presentation, slide 13-19)
- **Hearing loss screening** (TOAE, hearing test at 8th month, starting with 3y. every 2 y whispering test, 5 y audiometry)
- **Vision screening** (monocular vision of infant , starting with 3y every preventive exam has to investigate vision on optotype)
- **Antropometric screening** (weight , height, head circumference curve, BMI – early detection of growth disorders, failure to thrive, obesity)
- **Autism Spectrum Disorder Screening** (M-CHAT Questionare in 18 month exam)
- **Dyslipidemia and cardiovascular disease screening** (5 y, 13y questionare)

Pediatric screening II.

- Speech disorders, psychomotoric development disorders, somatic disorders (every preventive exam), school ability test (with 5y of age)
- Selective screening: risk groups screening according to predetermined criteria –
 - screening of 1st degree relatives for celiac disease

Health and Vaccination Passport

Preventive examinations + antropometry + health deviations

Chronic diseases + allergies

Stomatologic examination

Vaccination chart

Growth charts

BP nomograms

Parental education



Vaccination



Vaccination in pediatric office (PLDD)

- **Regular obligatory vaccination**
 - HEXA vaccine (**D Te aP HiB HB Polio**)
 - MMR (**mumps, measles, rubella**)
- **Voluntary vaccination**
 - **IPD, HPV, IMD meningoccaemia** (covered by Public Health Care System)
 - Varicella, HAV, tick-borne encephalitis
- **Vaccination of risk population**
 - TBC, IPD, IMD, influenza

Types of Vaccines

Live attenuated vaccine

- bacterial - TBC (BCG)
- viral - OPV, M, M, R, yellow fever

Inactivated vaccine

- bacterial - Per
- viral - VH A, tickborne encephalitis, IPV, rabies ...
- split vaccine – influenza

Subunit/conjugate/polysaccharide vaccine

- bacterial - PCV,menB,menC
- viral - influenza

Toxoid vaccine

- tetanus

Recombinant mRNA vaccine

covid19

Contraindications of vaccination (CI)

- **temporary CI** – the physician should evaluate individually.
 - **permanent CI** – the assume by specialist in documentation
-
- **general CI** - the same for all vaccinations
 - absolute
 - relative
 - **specific CI** – different for different vaccines
-
- **„false” CI** - (anxieties and reasons for additional precautions – febrile convulsions, prematurity, chronic conditions...)

General contraindications and indications for deferral of vaccination

- **Acute infectious disease** – severe and intermediate course
- **Severe side effect after previous vaccine application**
- **Previous anaphylaxis to vaccine** or the components of vaccine in the past history
- **Early recovery after severe infections** - concerning the previous therapy (steroids, ATB, immunoglobulins...)
- **Incubation of infectious diseases** – exception of post-exposure vaccination
- **Primary or acquired immunodeficiency** (live vaccines)
- **Immunosuppressive therapy /inc. biologics)**
- **Malignancies**
- **Pregnancy** (live vaccines)

Route of vaccine administration

- **intramuscular** → till 2y. Into anterolateral area of the thigh, older children into m. deltoideus
- **Subcutaneous** → anterolateral arm area (MMR, chickenpox vaccine)
- **Intradermal** → into left arm (BCG – tuberculosis)
- **Oral administration** → alive vaccine RVGE
- **Nasal** – influenza vaccine

Adverse reactions

- **Expected adverse reactions – local and general** included in patients information and sPC
- **Suspected unexpected reactions** – not reported in SPC and suspected with vaccine application

Adverse event management:

- **Urgent intervention with anaphylaxis**
(equipment of every office for management life-threatening events)
- **Treatment of local and general symptoms**
- **Reporting system of adverse events** (under Czech legislation regulations)

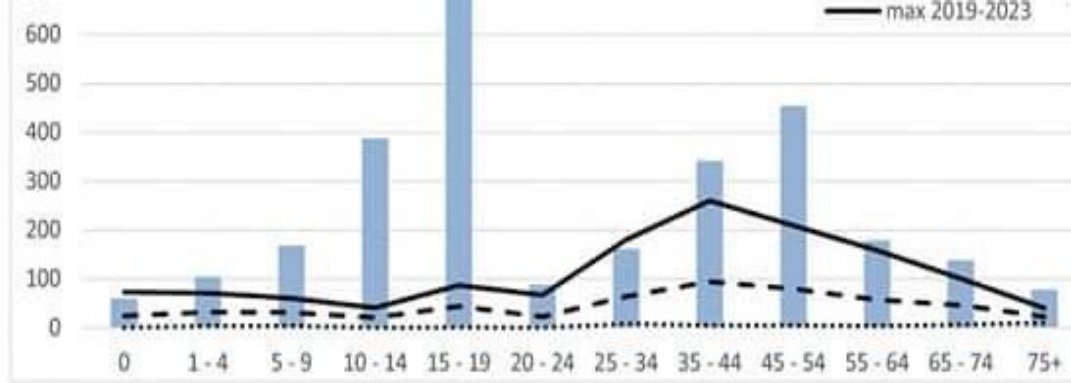
Immunisation schedule Czech Republic

- **Hexavaccine 2+1**
 - **(3+1 premature babies ≤37 gw.)**
- Optional Pneumococcal conjugate vaccine 2+1
- Optional meningococcal vaccine 2+1
- **MMR**
 - **13 -18 months 1st dosis**
 - **5 - 6y. 2nd dosis**
- **DTaP booster 5y.**
- **DTaP Polio booster 10y.**
- Optional HPV vaccination for girls and boys completely covered by public sources 11-14y.
- Optional IMD vaccination 14-16y.

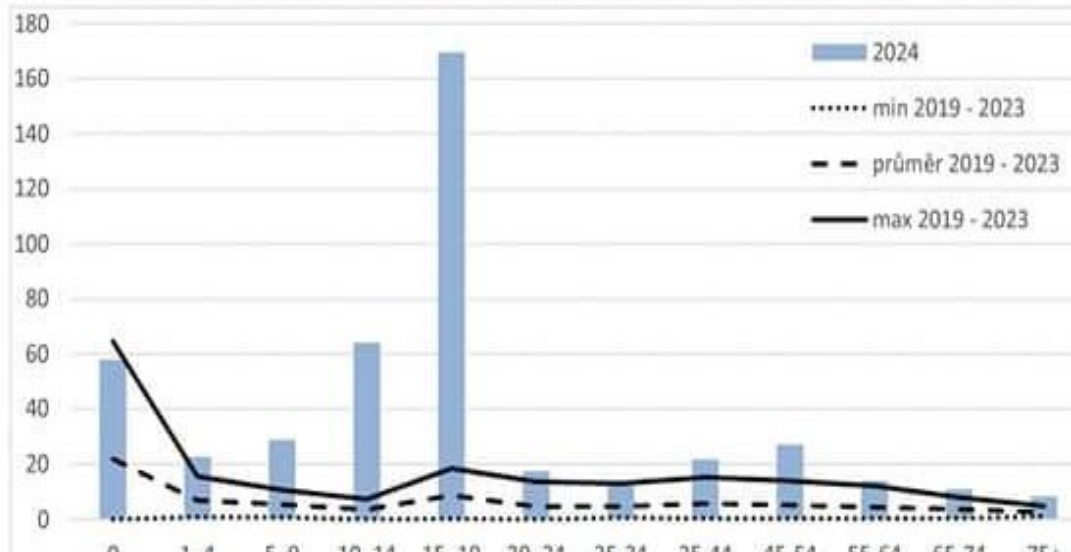
Bordetella pertussis –



<https://www.facebook.com/mediciproockovani/videos/4643310585688362/>



Graf č. 3 – Pertuse, ČR, nemocnost na 100 tis obyvatel ve věkových skupinách v roce 2024 v porovnání s maximální, průměrnou a minimální nemocností ve věkových skupinách v letech 2019 - 2023



Pertusis – epidemiologic data 2024 Czech Rep.

Pertussis – how to stop spread of disease?

- Vaccination of children
- Vaccination of pregnant woman in 3rd trimester
- Vaccination of adult family members in perinatal period
- Revaccination of adult persons minimally once during adult life

Vaccination schedule 2024



Age	
9 w.	Hexavaccine 1st dose (D,T,aP, HiB, HBV, Polio)
2nd-3rd month	Pneumococcus (IPD) 1st dose – voluntary, recommended Meningokok B (IMD B) 1st dose – voluntary, recommended
4 months	Hexavaccine 2nd dose (2 months interval)
5th-6th month	IPD 2nd dose – voluntary, recommended (2 months interval) IMD 2nd dose – voluntary (2-3 months interval)
12th-15th month	Hexavaccine booster (6 months after second dose) IPD booster 3rd dose - voluntary (6m. after 2nd dose) IMD B booster 3rd. dose – voluntary(6 – 9 m. after 2nd dose)
13th-18th month	Rubella, Measles, mumps
1st-2nd y.	IMD A,C,Y, W – voluntary, recommended
5th-6th y.	Diphtheria, tetanus, pertussis – booster
5th-6th y.	Rubella, measles, mumps - booster
10 - 11 y.	Diphtheria, tetanus, pertusis, polio - booster
11th-14th y. B/G	HPV infection (2 doses in 6 months)
14th – 16th y B/G	IMD B/ ACWY vaccination

Regular vaccination - hexavaccine

- Diphtheria and Tetanus toxoid, acellular Pertussis, HiB, POLIO, HBV
 - *i.m. administration*
 - *Starting with 9 weeks of age*
- 2 doses in 2 month interval, booster after 6 months 2+1
(NNPH <37 w.3+1 schedule)*
- *5y DTaP booster*
 - *10y DTaP Polio booster*

Pneumococcal conjugate vaccine (PCV)

- Invasive infections by *Streptococcus pneumoniae* (IPD)
- IPD - bacteriemia (sepsis), meningitis,
- pneumonia, arthritis
- Partial defense - acute mediotitis
- Decreased number of children with pneumococcal carrier

- Optional - voluntary vaccination + risk group vaccination
- See schedule
- 2 shots in interval 2 month, booster 6 months after last shot in infants



Meningococcal vaccine

- *Neisseria meningitidis* typ A,B,C, W, Y
- Infection: sepsis, septic shock or meningitis
- Risk groups: 2m.-2y. (menB,C), adolescents + young people, (ACWY), travellers, patients after bacterial meningitis, patients with IDS, asplenic patients
- Vaccination A,C,W-135 Y (Nimenrix, Menquad fi)
- Vaccination menB (Bexsero, Trumenba)
- i.m. conjugated vaccine

HPV vaccine

- Cervical cancer in women, anal and penis cancer in man , genital warts (), laryngeal cancer
- HPV (human papilloma virus) – STD
- **Optional Vaccination of 11-14y old girls and boys – covered by public sources**
- **GARDASIL 9 (9valent 16,18,31,33,45,52,58 6, 11)**
 - 2 doses in 6 month interval



Rotavirus Vaccination

- Risk population – children < 5 years
- Nosocomial and community acquired
- Reduces all severe gastroenteritis in children
- Bovine/human **oral** live vaccine Rotateq/Rotarix
- 2/3 doses – infants till 6th month of age



Chickenpox (Varilrix)

- Live attenuate vaccine
- 2 doses for every age (1y – adult)
- Subcutaneous administration route

Toddlers before kindergarten

School aged children who didn't experience disease

Other voluntary vaccinations

- Covid19
- Influenza
- Hepatitis A
- Tick-borne encephalitis

Risk group vaccination in children



Indication for BCG vaccination

- Vaccination of risk groups in Czech Rep (2011)
- One or both parents, or siblings have/had active TBC
- Child, one of the parents, or family members was born, lives longer than 3 month in country with higher incidence TBC more 40 / 100 000 inhabitants
- Child was in contact with TBC

Questionare for risk of TBC for all neonates born in Czech Republic



BCG vaccine

- Bacillus Calmette-Guerine vaccine
- Live attenuated vaccine against TBC
- Intradermal route of administration
- Protects against military TBC, TBC meningitis

Risk groups vaccination in children – PCV, MenB, MenC, Influenza vaccine.

- Primary immune deficiency – clinical symptoms of ID associated with disorders of Ig, T ly, fagocytosis and complement
- Sever secondary ID
- Asplenia functional and anatomical
- Transplantation of stem cells
- Patient after bacterial meningitis and sepsis

http://www.who.int/immunization_monitoring/en/globalsummary

Address  http://www.who.int/immunization_monitoring/en/globalsummary/countryprofileselect.cfm  Go



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WHO Vaccine Preventable Diseases Monitoring System
2005 Global summary

Last WEB update: 8 October 2005

Country profile selection centre:

Region list (double click or click the OK.. button to process)

- Global
- AFR
- AMR
- EMR

Country list (double click or click the OK.. button to process)

- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Antigua and Barbuda
- Argentina
- Armenia

Layout style:

Colourful Gray White

OK with the selection. Generate profile

The country profile sheet provides ample hyperlinks. Every page section, subscribed title, and indicator, has a balloon popup associated to it. It saves from scrolling down to the footnote.

(This balloon feature works only on browsers whose version is higher than 4.)

Page sections, section titles, entries (ie. disease/antigens) can also be hyperlinks. These are always easy to see as the cursor changes to a hand shape. (Move the mouse here to see a hand) Browsers of version greater than 4 also announce these hyperlinks by a colour change when the mouse hovers on them.

Thank you for attention!

