

# EXAMPLE NITAG

## RECOMMENDED ADULT VACCINES IN THE CZCEH NIP

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**HEALTH BURDEN ESTIMATES**



# OUTLINE



1. CZ Adult Vaccination – introduction
2. Health burden estimates and vaccination examples
  - a) Tick borne encephalitis
  - b) Pertussis – whoopin cough
  - c) Pneumococcal/meningococccal diseases
  - d) Herpes zoster- shingles
3. Role of NIP for adults and vaccination strategy

## VACCINATION - PRESENT BASED ON THE PAST CZECH VACCINATION ACHIEVEMENTS

Czech footprint in smallpox eradication – prof. Karel Raška (1909-1987)

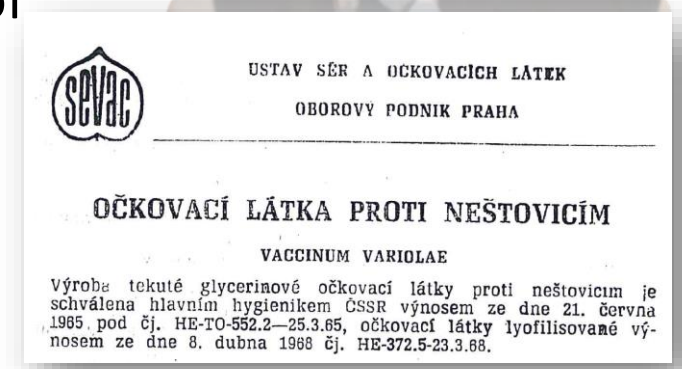
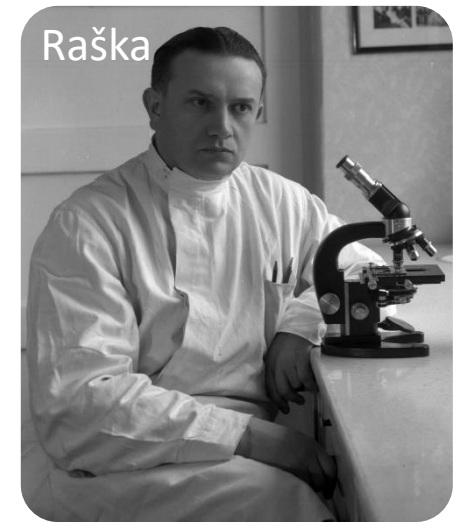
Czechia – **one of the first 5 countries in the world** with own polio vaccine – assoc.prof. Dimitrij Slonim (1925-2017) – *the production of polio vaccine then had to be handed over to Moscow*

**First in the world** in polio vaccination (1959) and elimination (1961)

Czech virologists (led by Slonim) prepared the world's third most effective smallpox vaccine (1965), Institute of Serums and Vaccines - rabies vaccine and measles and mumps vaccine

Post-communist era (early 1990s) - under privatisation, the Institute of Vaccine and Immunisation (IAVI) disappeared and we lost vaccine production

**The only country in the world** to introduce reimbursement for meningococcal vaccination in adolescents (menB) into the NIP



# ADULT VACCINATION

- 2005 – establishment of the Czech Vaccinological Society – **key driver**
- 2009 - Vaccination calendar versus NIP
- 2010 – CZ National Immunisation Commission (NITAG)
- General practitioners – main vaccination provider
- Support of Health Insurance Companies persists low



## Očkovací kalendář pro dospělé - podle věku



Nemoc	Věková kategorie					Přeočkování	Poznámka
	18–26 let	27–49 let	50–59 let	60–64 let	65+ let		
Tetanus	booster po 10–15 letech		booster po 10 letech			po 10–15 letech	očkování také v rámci úrazů a poranění
Pertuse	minimálně 1 dávka 1x za život					po 10–15 letech	zejména rodinné kontakty dětí do 1 roku věku, těhotné ženy, možné v rámci očkování proti tetanu
Varicella	2 dávky					nestanoveno	pro vnímavé (bez historie nemoci nebo séronegativní) + práce v riziku + rizikové skupiny
VHA	2 dávky					nestanoveno	pro vnímavé a neočkované v dětství + práce v riziku + rizikové chování; možné aplikovat kombinovanou VHA/VHB vakcínu
VHB	3 dávky					nestanoveno	pro vnímavé a neočkované v dětství + rizikové skupiny + rizikové chování; možné aplikovat kombinovanou VHA/VHB vakcínu
HPV	3 dávky					nestanoveno	pro ženy i muže neočkované v dětství
Herpes zoster			1 - 2 dávky dle použité vakcíny			nestanoveno	očkování se doporučuje zahájit co nejdříve
Klíšková encefalitida	3 dávky, první přeočkování po 3 letech, další po 5 letech		3 dávky, přeočkování po 3 letech			po 3–5 letech, max. po 10 letech	rizikové skupiny + práce v riziku;
Pneumokokové nákazy	1 dávka PCV nebo PPV		1 dávka PPV nebo PCV	1 dávka PCV + 1 dávka PPV23		PPV: po 5 letech pouze 1 x	osoby umístěné v léčebnách pro dlouhodobě nemocné a v domovech pro seniory + osoby se zdravotním postižením nebo v domovech se zvláštním režimem s chronickým nespecifickým onemocněním + u jedinců po transplantaci hematopoetických kmenových buněk (HSCT) + osoby se závažnými primárními nebo sekundárními imunodeficity
Meningokokové nákazy	2 dávky MenB, 1 - 2 dávky Men A, C, W, Y					podle SPC vakcíny	rizikové skupiny + práce v riziku + cestovatelé + osoby v ohnisku IMO + osoby se zdravotní indikací; přeočkování pouze pro osoby s přetrvávajícím rizikem infekce
Chřipka	1 dávka					každoročně	očkování se týká zdravých osob + osoby s rizikovými faktory + práce v riziku
Hib	1 dávka					nestanoveno	rizikové skupiny
Vzteklina	5 dávek postexpozicičně / 3 dávky preexpozicičně					po 2–5 letech pouze při práci v riziku	cestovatelé, rizikové skupiny (např. speleologové), práce v riziku
Spalničky	1 dávka					nestanoveno	zdravotníci dle legislativy, cestovatelé

**Vysvětlivky:**

**MenB** meningokoková vakcína proti séro skupině B  
**Men A, C, W, Y** meningokoková konjugovaná tetavalentní vakcína proti séro skupině A, C, W, Y  
**PCV** pneumokoková konjugovaná vakcína  
**PPV** pneumokoková polysacharidová vakcína

**VHA** virová hepatitida typu A  
**VHB** virová hepatitida typu B  
**Hib** Haemophilus influenzae typ b  
**HPV** lidský papillomavirus

doporučeno všem dané věkové kategorie  
 doporučeno v případě rizikových faktorů

## VACCINATION SYSTEM IN CZECHIA

- **Mandatory or voluntary** vaccination
- Mandatory = fully reimbursed & voluntary = some reimbursed, some not
- Mandatory mainly for children (against 6 VPIs: DTaP-IPV-Hib-HBV + MMR)
- Mandatory for adults - only for specific risk group (HBV, HAV, MMR, IPD)

# FULLY REIMBURSED VACCINATION - NIP

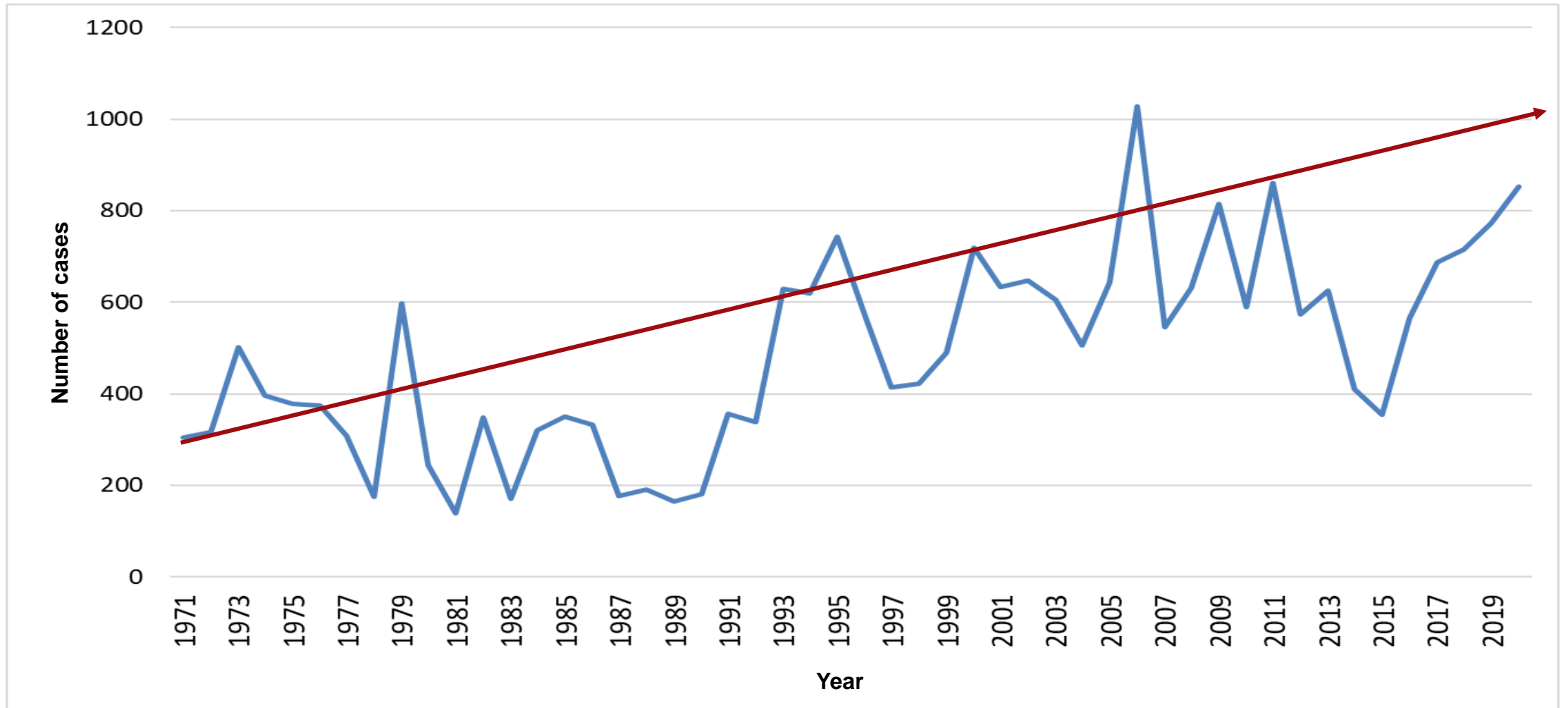
## CHILDREN

1. BCG vaccine (only for high risk infants)
2. Hexavaccine
3. MMR vaccine
4. Tdap (in 5-6 yoa)
5. Tdap-IPV vaccine (in 10-11 yoa)
6. Pneumococcal vaccine (fully only PCV10)
7. HPV vaccine (fully any in 13 yoa)
8. Men B vaccine (up to 12 months and in 14-15 yoa)
9. ACWY vaccine (in 1-2 yoa and in 14-15 yoa)
10. Rabies vaccine
11. Covid-19 vaccine

## ADULTS

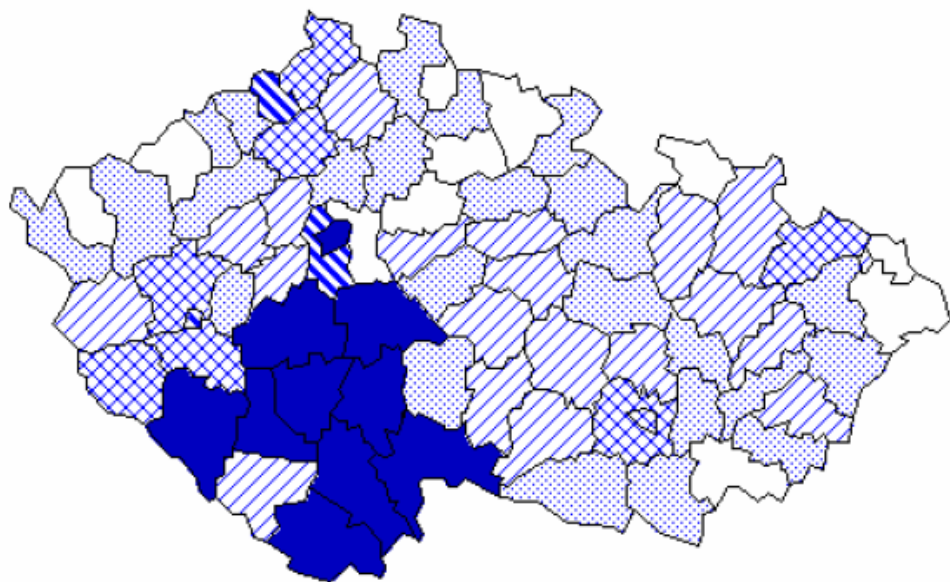
1. Tetanus vaccine
2. TBE vaccine (for 50+ yoa)
3. Flu vaccine (for 65+ yoa, risk patient and HCWs)
4. Pneumococcal vaccine (for 65+ yoa, risk patient)
5. MMR vaccine (selected HCWs)
6. Men B a ACWY vaccines (risk patients)
7. Hib vaccine (risk patients)
8. Rabies vaccine
9. HBV vaccine (HCWs, injury, hemodialysis)
10. Covid-19 vaccine

# TBE, NUMBER OF CASES IN 1971-2020, CZECHIA

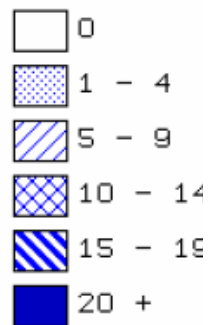


# TICK BORNE ENCEPHALITIS, CZ, CASES BY DISTRICT IN 2000 AND 2020

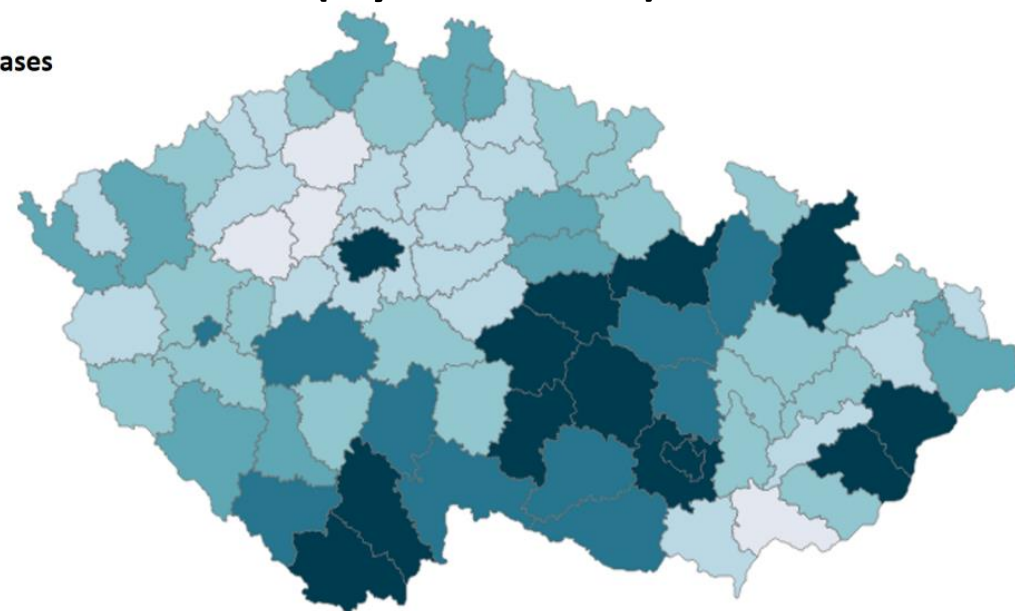
2000 (23 years before)



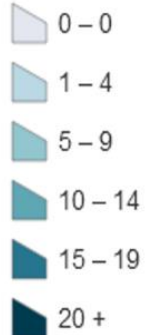
případy - cases



2020 (3 years before)

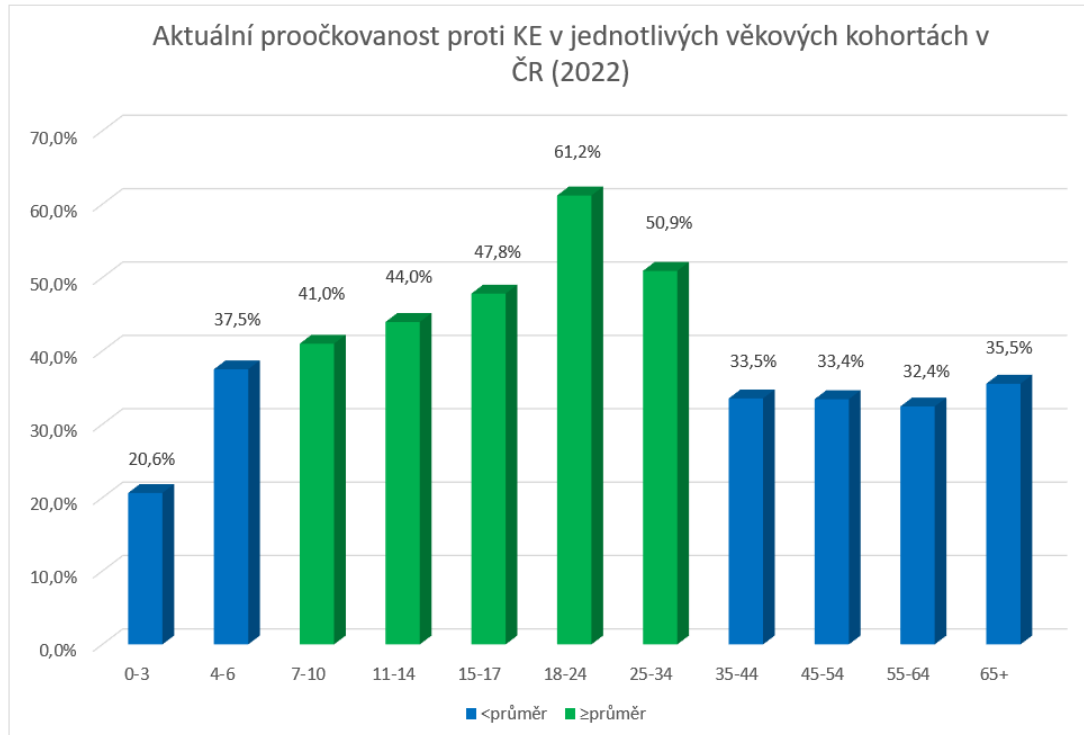


případy - cases

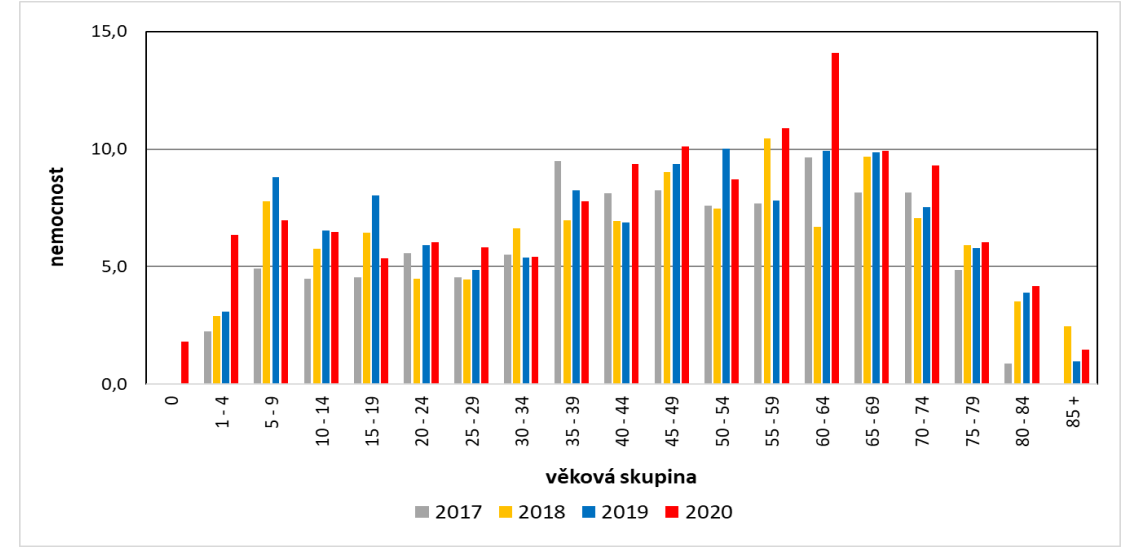




# CURRENT VACCINATION COVERAGE IN EACH AGE GROUP, CZECHIA, 2022



TBE, Czech Republic, 2017-2020, incidence by age group per 100 000 population



■ < average  
■ ≥ average

Recommended for all ages  
2022 – reimbursement for 50+

Celkem	0-3	4-6	7-10	11-14	15-17	18-24	25-34	35-44	45-54	55-64	65+
38,1%	20,6%	37,5%	41,0%	44,0%	47,8%	61,2%	50,9%	33,5%	33,4%	32,4%	35,5%



# TBE VACCINATION RATE AND ADHERENCE TO THE VACCINATION SCHEDULE, CZECHIA, 2022

Just under half of those vaccinated completed the basic schedule, only 27% receiving the first booster



## 38%

respondents received at least **1 dose of the TBE vaccine**

2021: 33.2%  
2020: 32.6%  
2019: 29.0%  
2018: 25.0%



### 2<sup>nd</sup> dose

the proportion of those who received a second dose (of all vaccinated)

## 70%



0-15 years

## 65%



16-59 years

## 71%



60+ years

## 70%

### 3<sup>rd</sup> dose

proportion of those who have completed the basic schedule (of all vaccinated)

## 45%



0-15 let

## 42%



16-59 let

## 44%



60+ let

## 58%

### Booster 1

proportion of those who received the first booster (of all vaccinated)

## 27%



0-15 let

## 26%



16-59 let

## 25%



60+ let

## 46%

# EPIDEMIOLOGY OF PERTUSSIS IN CZECHIA

## Pre-vaccine era

- 30–40 thousand cases/year
- 80 deaths/year
- 1956 highest morbidity: 520.5/100,000

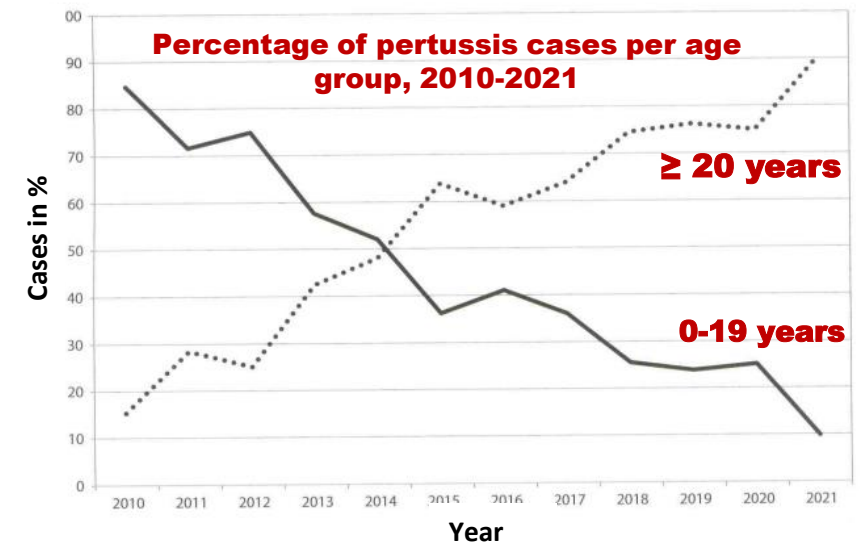
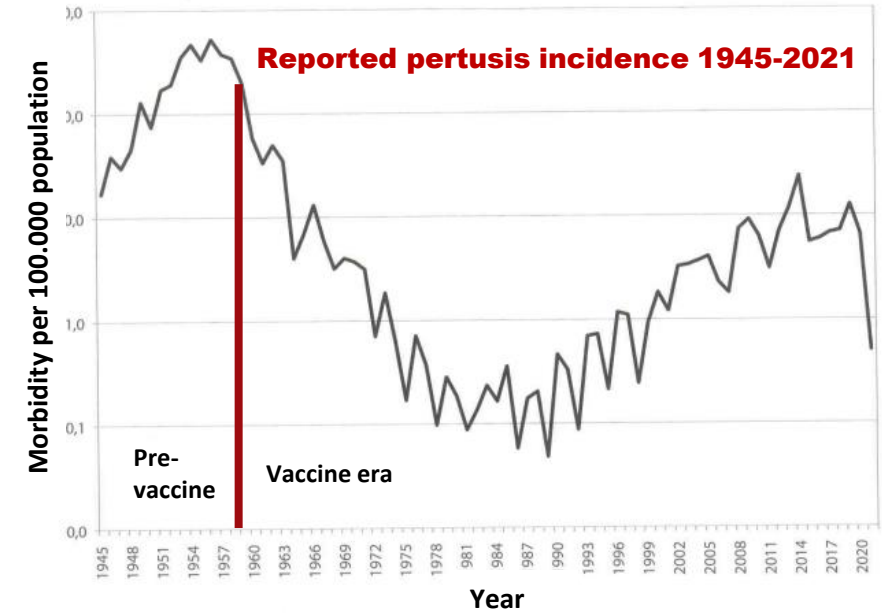
## Vaccine era

- 1958 Start of vaccination (wP)
- 1980 Incidence 0.1–0.3/100,000
- 1993 Beginning of upward trend in incidence
- 2005 The first death case for 35 years
- 2009 Highest incidence for 43 years (9.1/100,000); 2014 (24.0/100,000)
- 2009 1 booster dose for 11 years old children

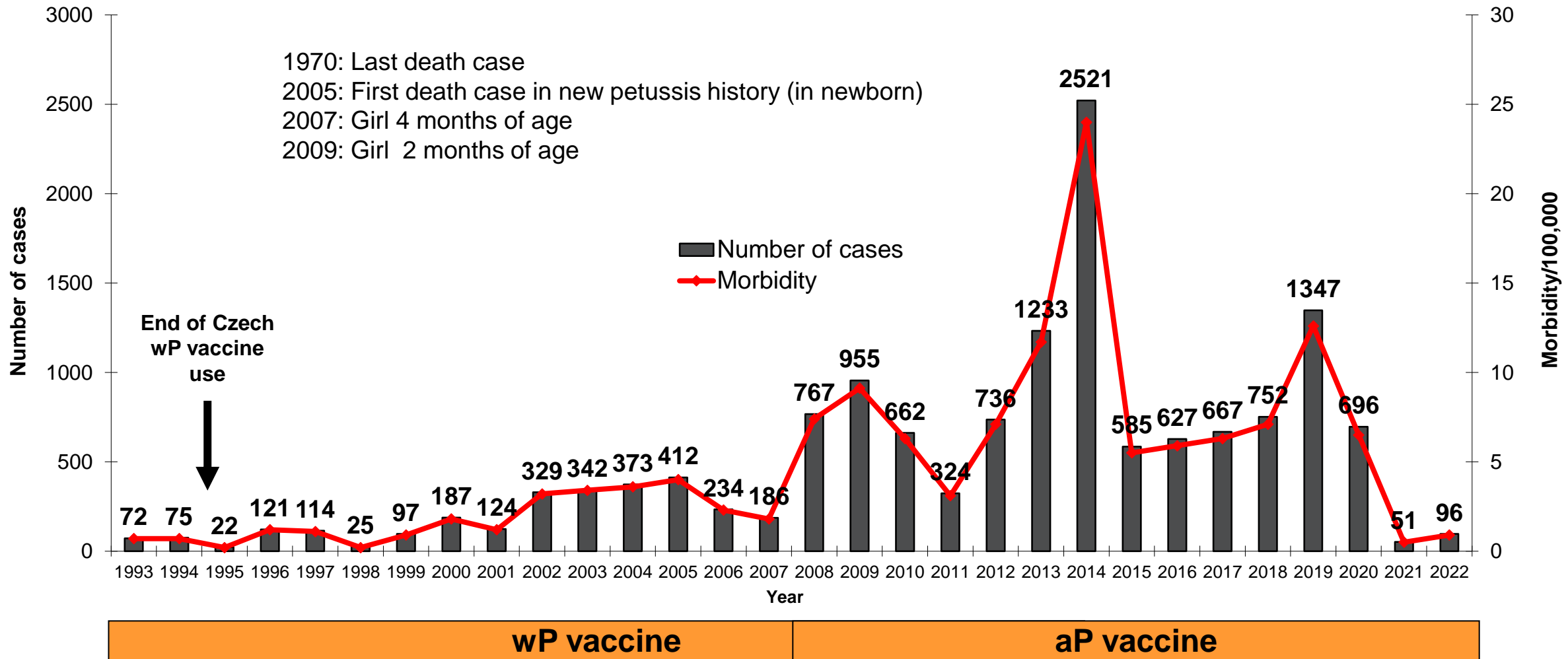
## Age shift after year 2014

**2021: 90.2% cases in adults (20+) and 98% hospitalization for pertussis in adults**

**Pertussis trends in the Czech Rep.**



# INCIDENCE AND NUMBER OF CASES OF PERTUSSIS IN CZ, 1993–2022

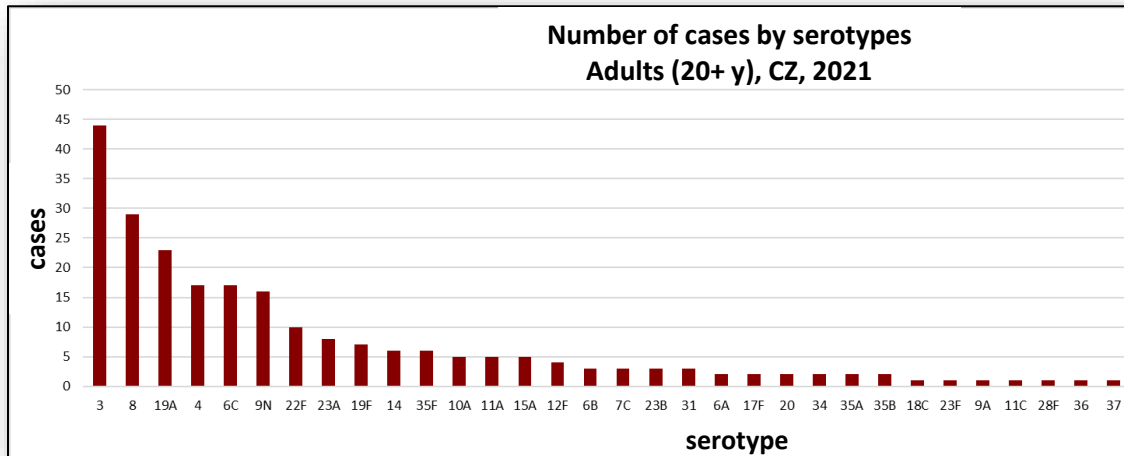


## UPDATE OF RECOMMENDATION

- **Update on vaccination recommendation againsts pertusis for pregnant women, 2021 (from 27<sup>th</sup> GW)**
- **NIKO (NIC) – 1 booster dose (dtap) once per adults life**

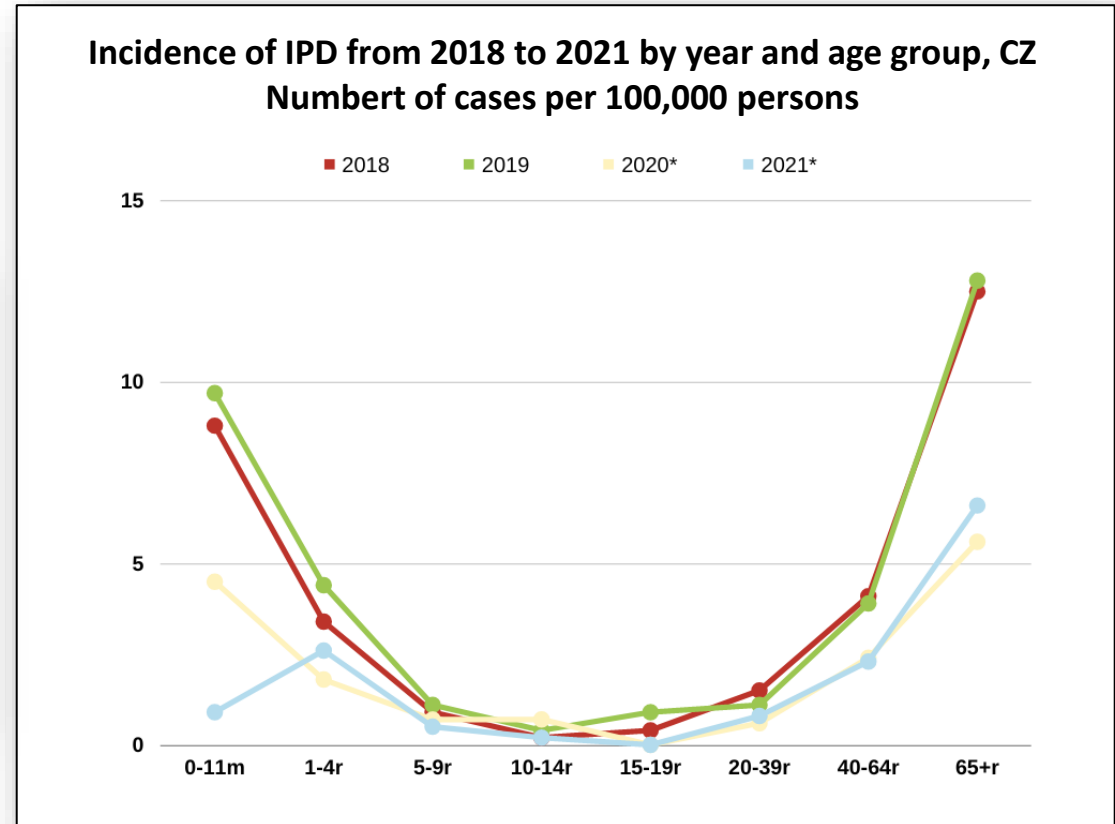
# PNEUMOCOCCAL DISEASES

The highest incidence of invasive pneumococcal disease (IPD) is seen in children under 1 year of age and **elderly over 65 years of age**



## Updated recommendation 2022:

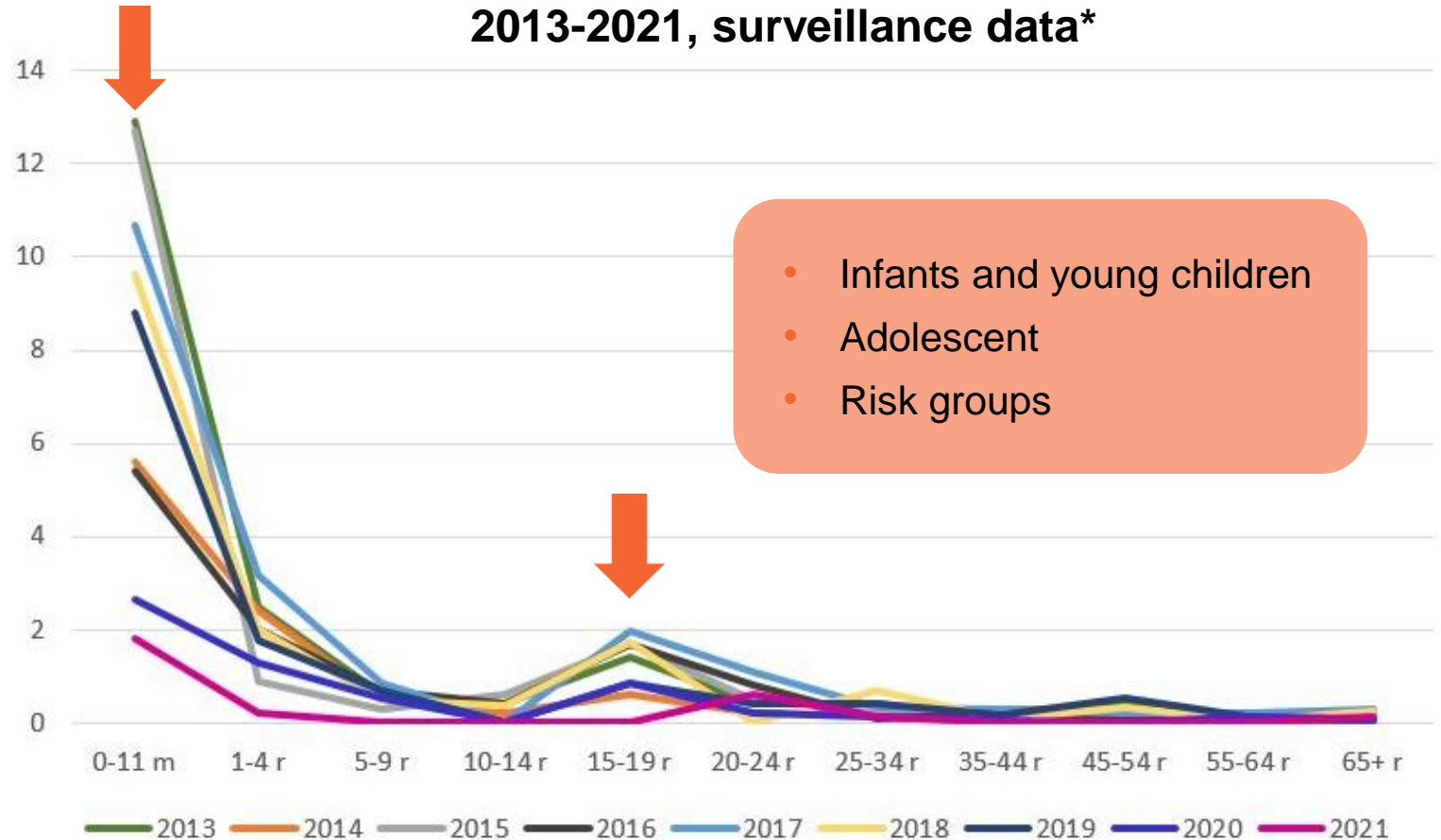
- Elderly 65+
- 18+ with comorbidities
- PCV20 or PCV15+PPSV23



# MENINGOCOCCAL DISEASES

Between 2011 and 2021, more than half of IMD cases in adolescents (aged 15-19 years) were caused by serogroup B

Age-specific morbidity, IMO Czech Republic, 2013-2021, surveillance data\*



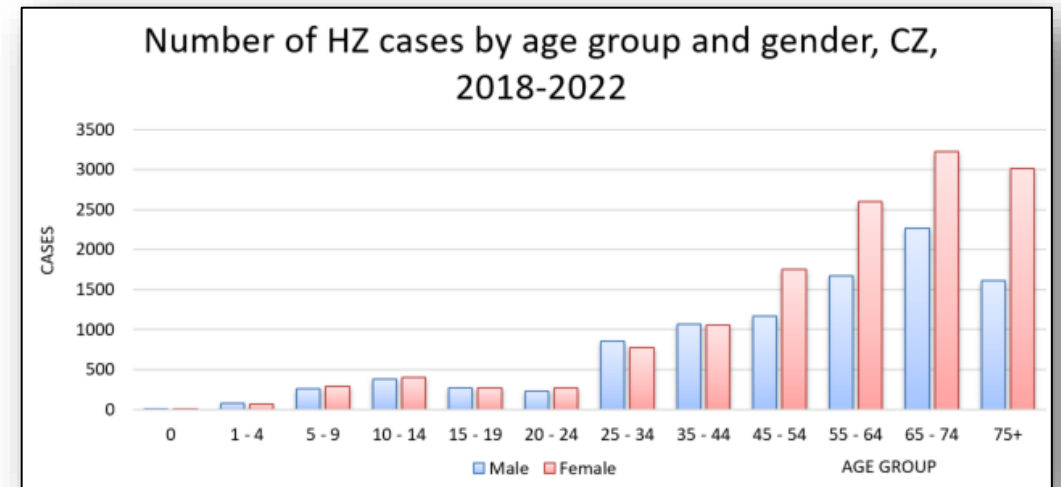
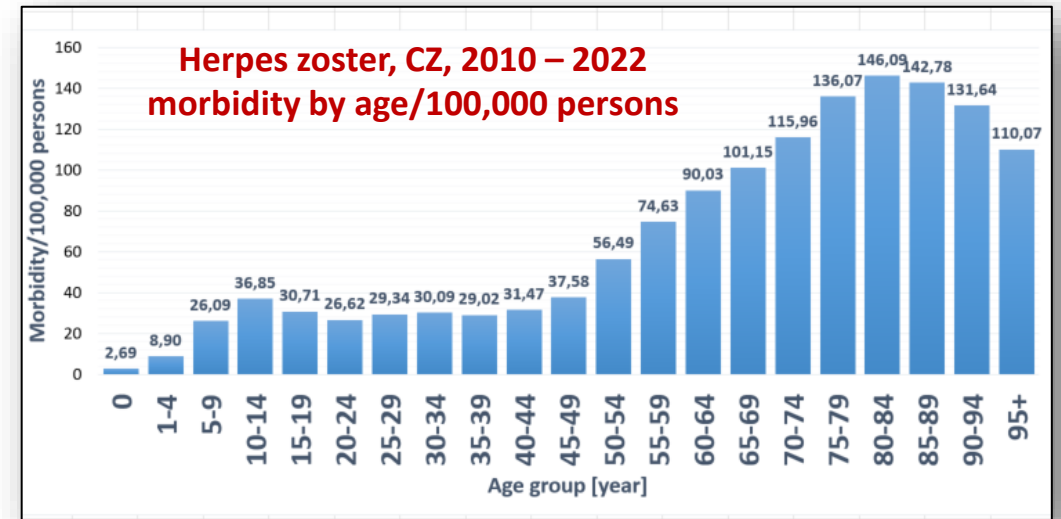
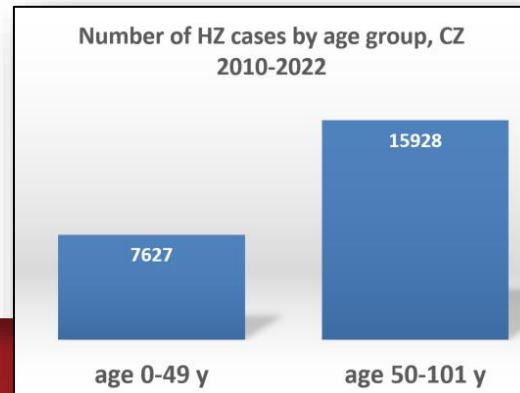
## Updated recommendation 2023:

- Adolescent 14-19 yoa
- High risk adults
- HCWs
- Travellers
- MenB + MenACWY

\*Graph processed according to data: National Reference Laboratory for Meningococcal Infections, State Health Institute in Prague. IMO cumulative surveillance data, period 2013-2021.

# HERPES ZOSTER, CZ

- HZ occurs all year round, no seasonality
- HZ occurs at any age, more often in women (62.22 vs 46.44/100,000, 2010-2022)
- Highest risk in 55+
- Number of cases in 50+ is 2 times higher than in younger
- The number of hospitalizations for HZ increases with age and is highest in those 65+
- **74,759 cases** in the last 10 years (**67% in people 50+**)





- Countries with both RZV/ZVL recommendations
- Countries with exclusive ZVL recommendations
- Countries with exclusive RZV recommendations
- Funded

Information as of  
**October 2022**  
References in the  
Supplementary Slide

**Shingrixeco  
and funding  
map in Europe**



**RZV = Recombinant Zoster Vaccine**

**ZVL = Zoster Vaccine Live**

COPD = chronic obstructive pulmonary disease  
RA = rheumatoid arthritis  
HSCT = hematopoietic stem cell transplantation  
JAK-I = Janus kinase inhibitors therapy  
SOT = solid organ transplantation  
DM = diabetes mellitus  
CVD = cardiovascular disease  
IS = immunosuppressive therapy

**Ireland**

50+ gen. population (RZV/ZVL)

18+ at increases risk (RZV)

**United Kingdom**

70&78 catch up (ZVL)

70-79 contraindication to ZVL (full list in the Green Book) (RZV)

60+ gen. pop. (RZV)\*

50+ at risk (not specified) (RZV)\*

(\*not yet implemented)

**Belgium**

60+ gen. pop. (RZV)

16+ IS therapy (incl. JAK-I) (RZV)

**Norway**

50+ gen. pop. (RZV/ZVL)

50+ at increased HZ risk (immunosoppression) (RZV)

**Sweden**

50+ gen. pop. (RZV/ZVL)

18+ at increased HZ risk (not specified) (RZV)

**The Netherlands**

60+ gen. pop. (RZV)

18+ immunocompr. (HSCT, solid tumors, hemat. malign., SOT, HIV) (RZV)

**Germany**

60+ gen. pop. (RZV)

50+ at increased HZ risk (immunosoppression/severe disease) (RZV)

**Switzerland**

65+ gen. pop. (RZV)

50+ mod. risk (eg. COPD, RA) (RZV)

18+ high risk (eg. HSCT, JAK-I) (RZV)

65-79 gen. pop. (ZVL)

**Luxembourg**

65+ gen. pop. (RZV)

18+ ID due to illness or tx (RZV)

**Czechia**

50+ gen. population (RZV/ZVL)

**Spain**

65&80 gen. pop. & catch up (RZV)

18+ immunocompr. (HSCT, SOT, JAK-I, HIV, hemat. malignancies, and solid tumors undergoing chemotx) (RZV)

(funded at national level via regional tenders)  
\*Only Madrid region

**France**

65-74 gen. population (ZVL)

(partially funded)

**Italy**

65 general population (RZV/ZVL)

50+ at increased HZ risk (DM, CVD, COPD, IS candidate) (RZV/ZVL)

18+ at increased HZ risk (varies by region) (RZV)

(funded via regional tenders)  
\*not yet implemented in all regions

**Austria**

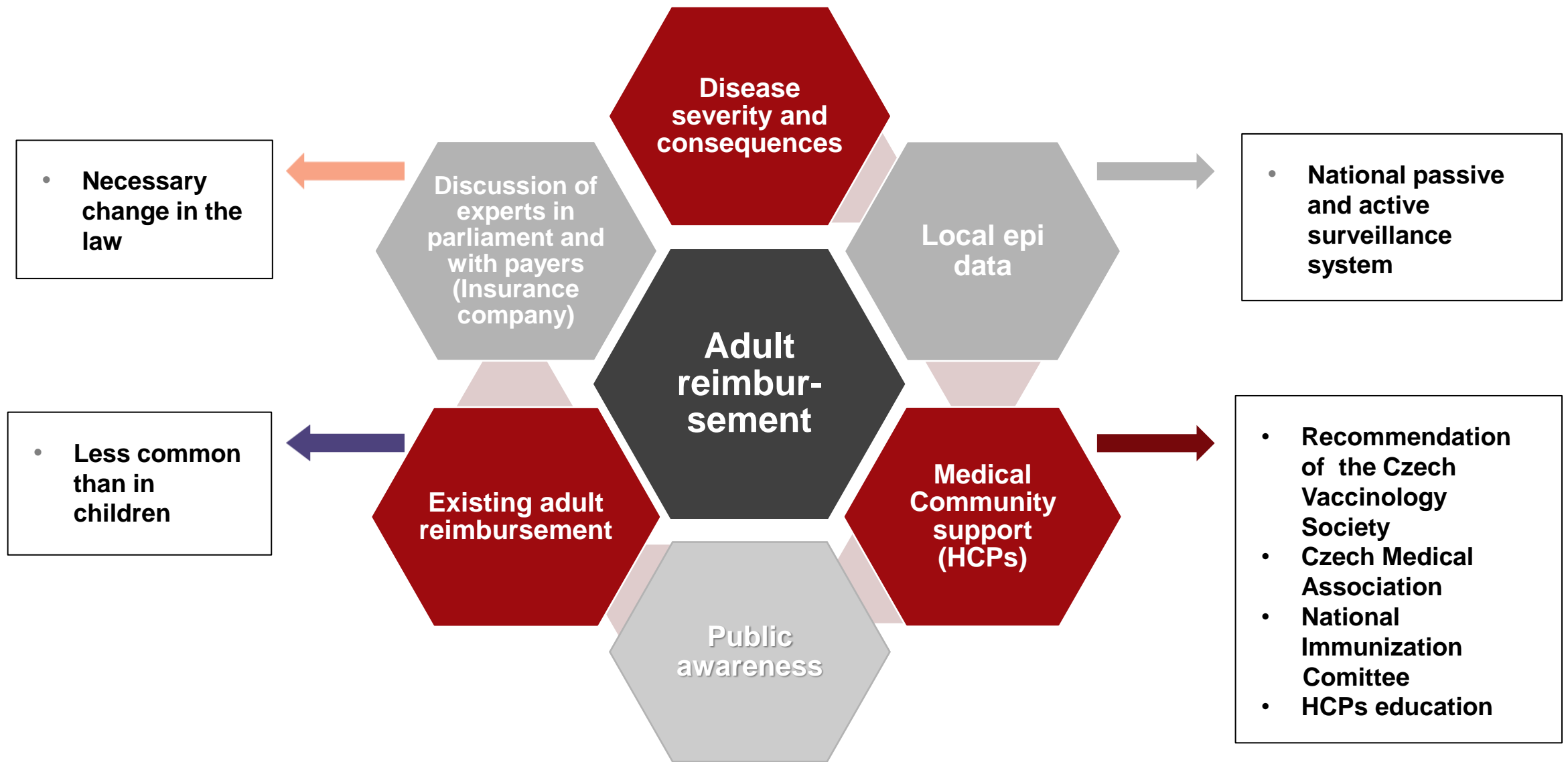
50+ gen. pop. (RZV)

18+ immunocompr. (not specified) (RZV)

**Greece**

60-75 gen. pop. (ZVL)

# MANY FACTORS HAVE INFLUENCED IMPLEMENTATION OF VACCINATION IN NIP IN THE CZECH REPUBLIC



**THANK YOU FOR YOUR ATTENTION**

