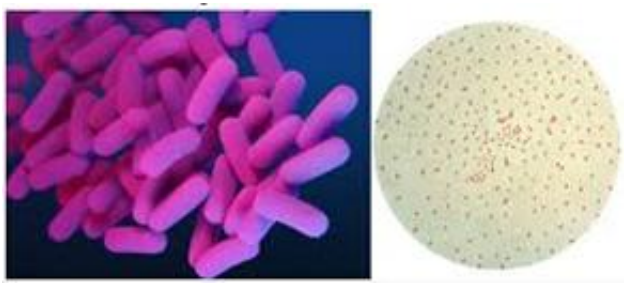
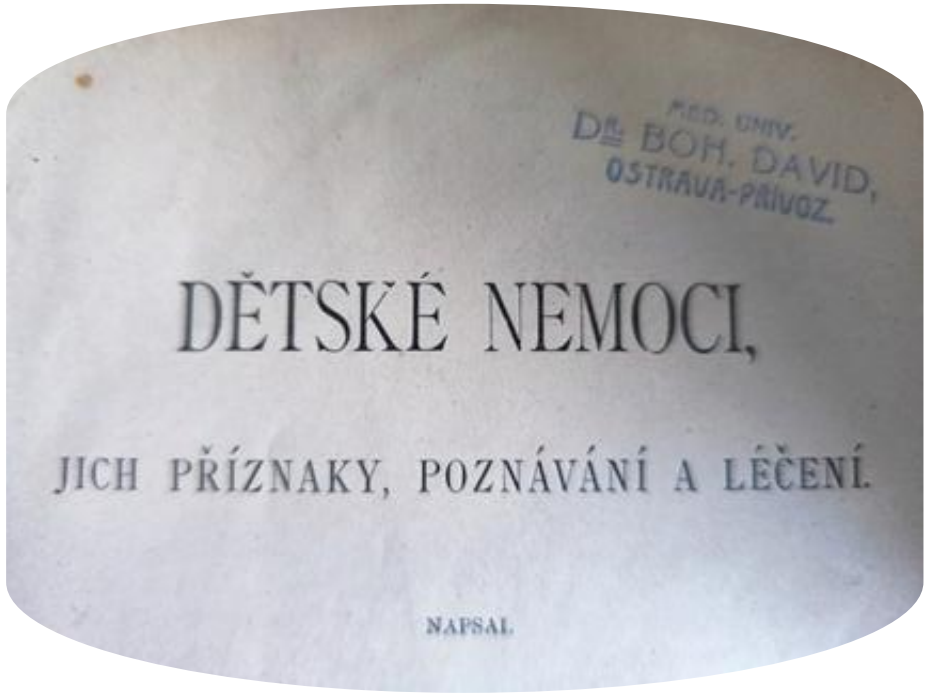


Bordetella
100 dňový kašeľ

Kurák, M., Fedor P.
KPAIM DFN a LF UPJŠ Košice

Bordetella

- Ochorenie 1. popísané epidémia v Paríži 1578
- Bordetella pertussis patogén - 1906
- Vakcína - 1940.

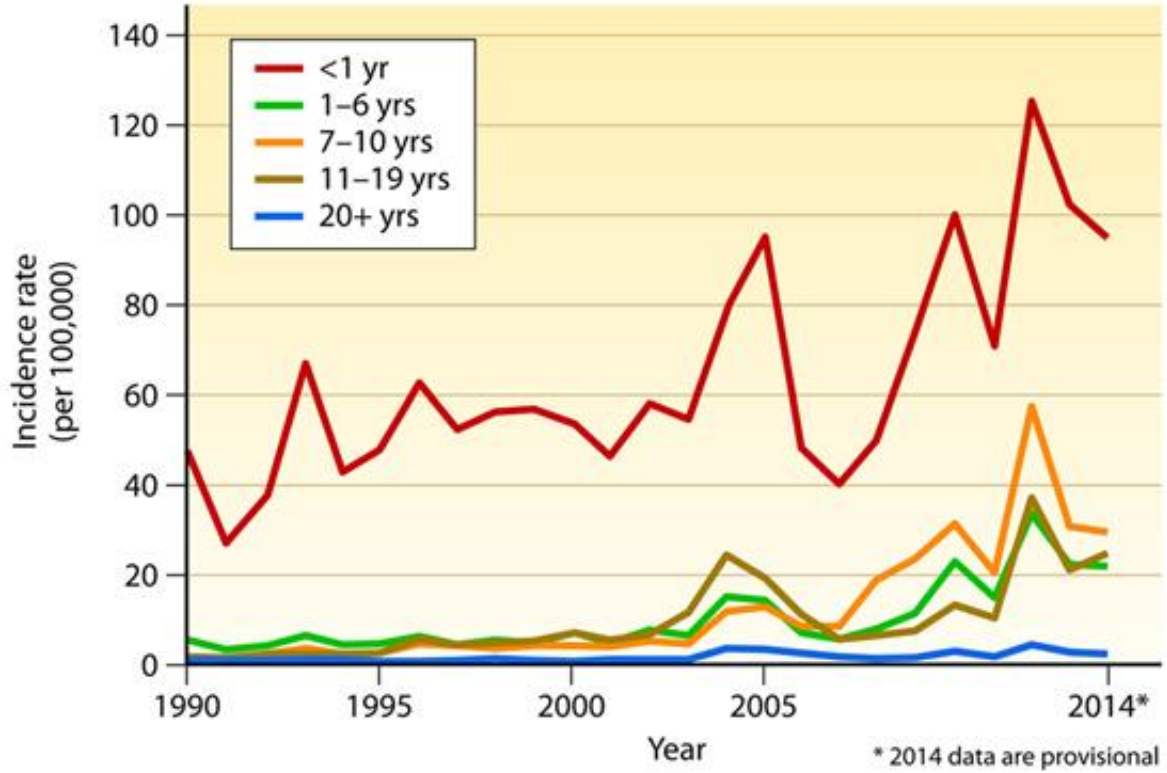


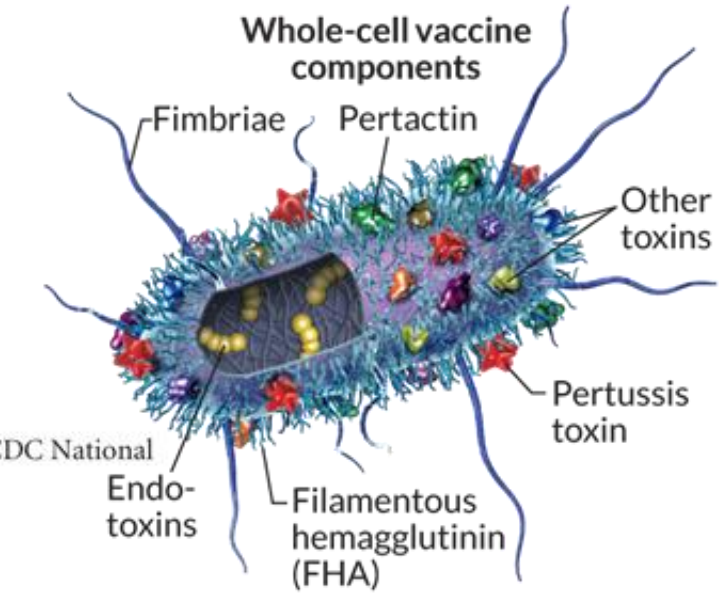
Pertussis – zádušný kašel

A stačí uslišeti jedenkráte záchvat kašle toho,
abychom ho nikdy více nezapomněli a diagnosu dle
něho,
třeba z vedlejšího pokoje učiniti.

Pertussis – zádušný kašel

- Diagnostika:
  - Kŕčovitý kašeľ, zvracanie
  - Opuch tváre s petéchiami
  - Zvredovatenie uzdičky – rezáky
- Liečba :
  - vetranie, mokré plachty,
  - chinín, bromidy, chloralhydrát
  - Inhalácie
  - Ťažké prípady 3xdenne vytieranie hrdla kokain, vnútorne morfín





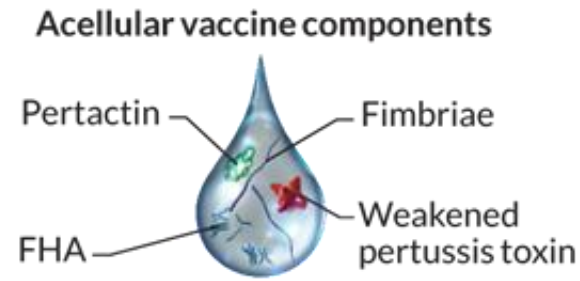


FIG 1 Incidence rates of pertussis by age group reported to the Centers for Disease Control and Prevention from 1990 to 2014. (Adapted from CDC National Notifiable Disease Surveillance System and Supplemental Pertussis Surveillance System [http://www.cdc.gov/pertussis/surv-reporting.html].)

Pacienti

Pacient č. 1

vek 2 týždne

- WBC 66 10^9/l hyperkapnické zlyhanie, sept. šok, exitus

Pacient č. 2

vek - 1,5 mesiacov

WBC 19 10^9/l

UPV - 29 dní

Pacient č. 3

vek 3 mesiace

WBC 80 10^9/l

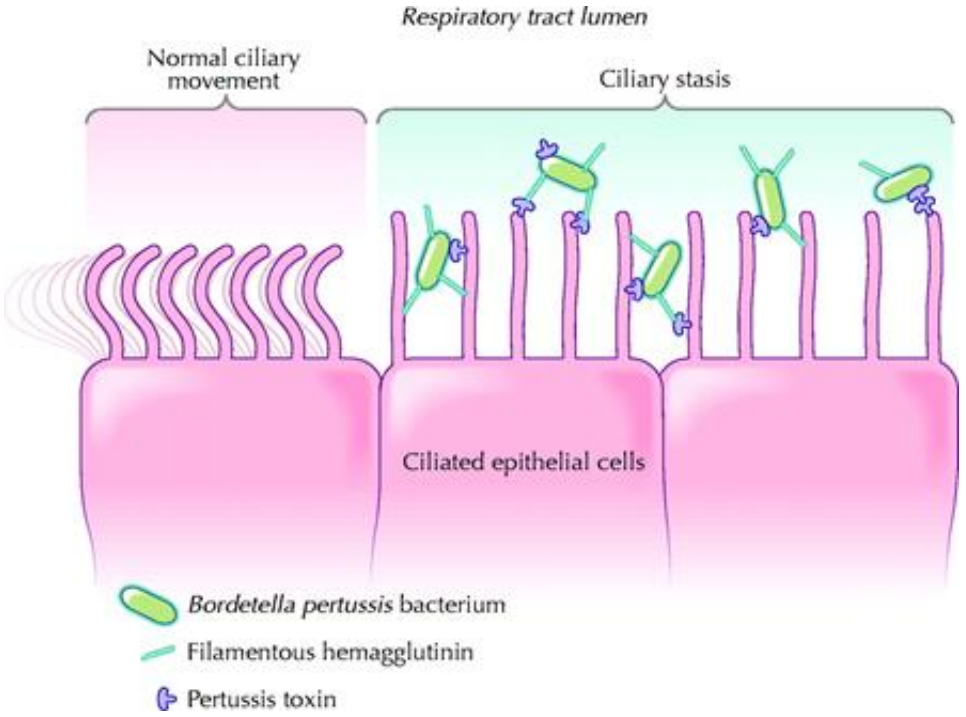
UPV - 22 dní

Synergy between pertussis toxin and filamentous hemagglutinin in binding to ciliated respiratory epithelial cells.

Uvoľnenie toxínov

- pertussis toxin (PT)
- dermonecrotic toxin,
- adenylate cyclase toxin
- tracheal cytotoxin

Lokálny zápal sliznice, poškodenie sliznice

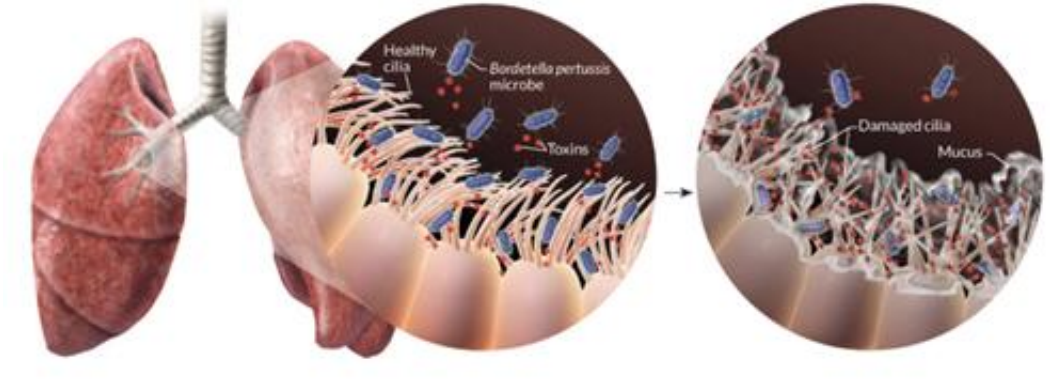


PT je kritický faktor má vzťah k mortalite dojčiat a je unikátny pre *B. pertussis*.
Zodpovedný za leukocytózu
Leukocytóza je hlavný rizikový faktor závažnosti ochorenia dojčiat.

Alberto E. Tozzi et al. CMAJ 2005;172:509-515

Mattoo S, Cherry JD. 2005. Molecular pathogenesis, epidemiology, and clinical manifestations of respiratory infections due to *Bordetella pertussis* and other *Bordetella* subspecies. *Clin Microbiol Rev* **18:**326–382.

Bordetella

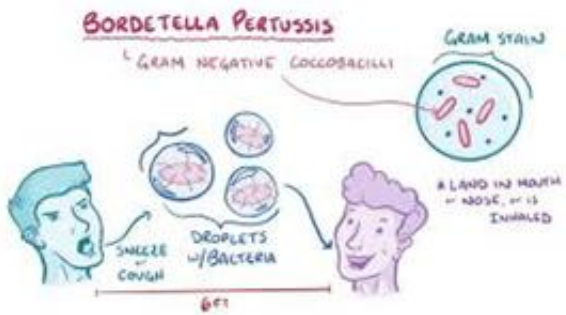


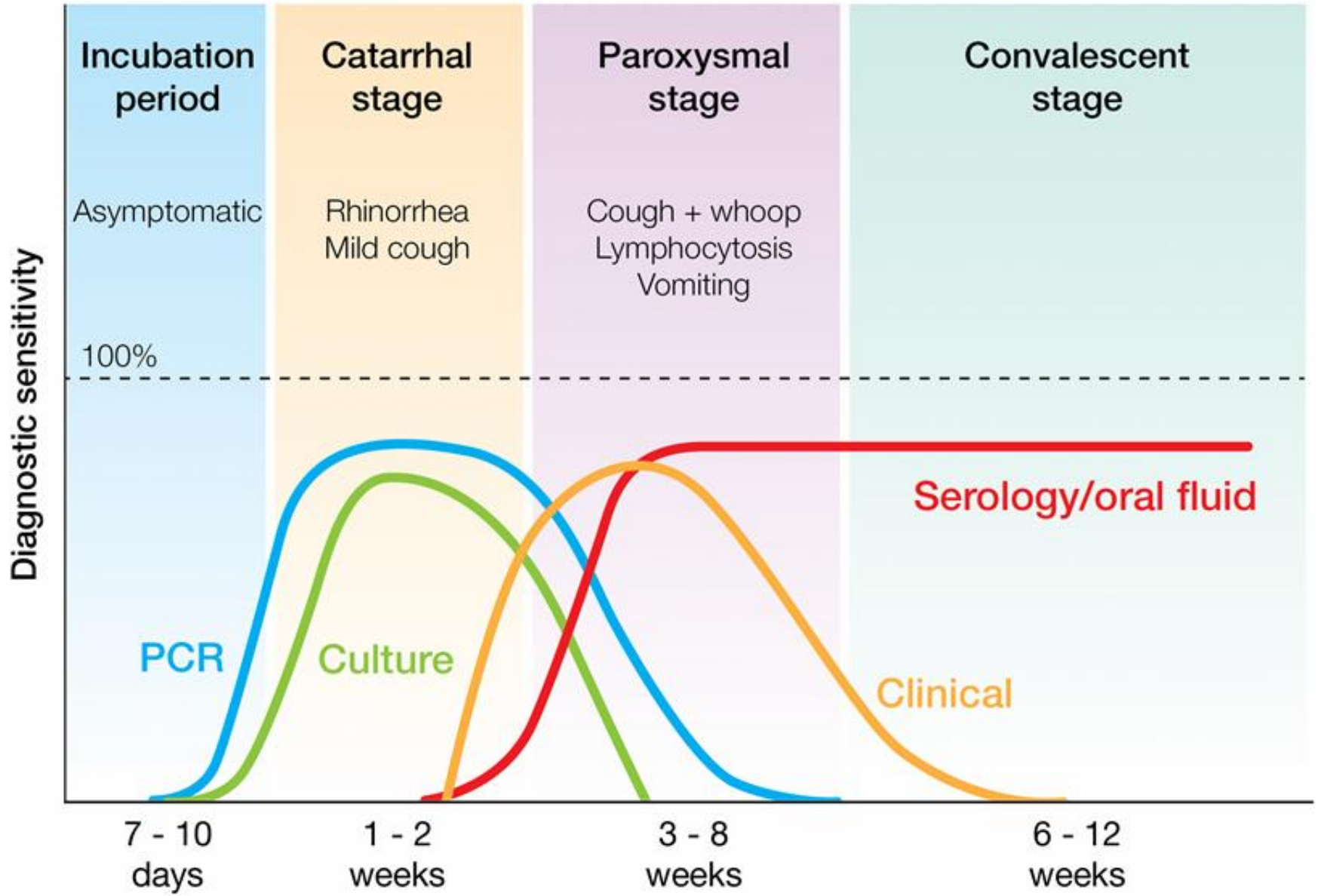
- erózie bronchiálnej sliznice, hyperémia a hojný mukopurulentný exsudát.

- nekrotizujúca laryngotracheobronchitída, bronchiolitída, opuch a krvácanie do pľúc, alveolárna epiteliálna nekróza

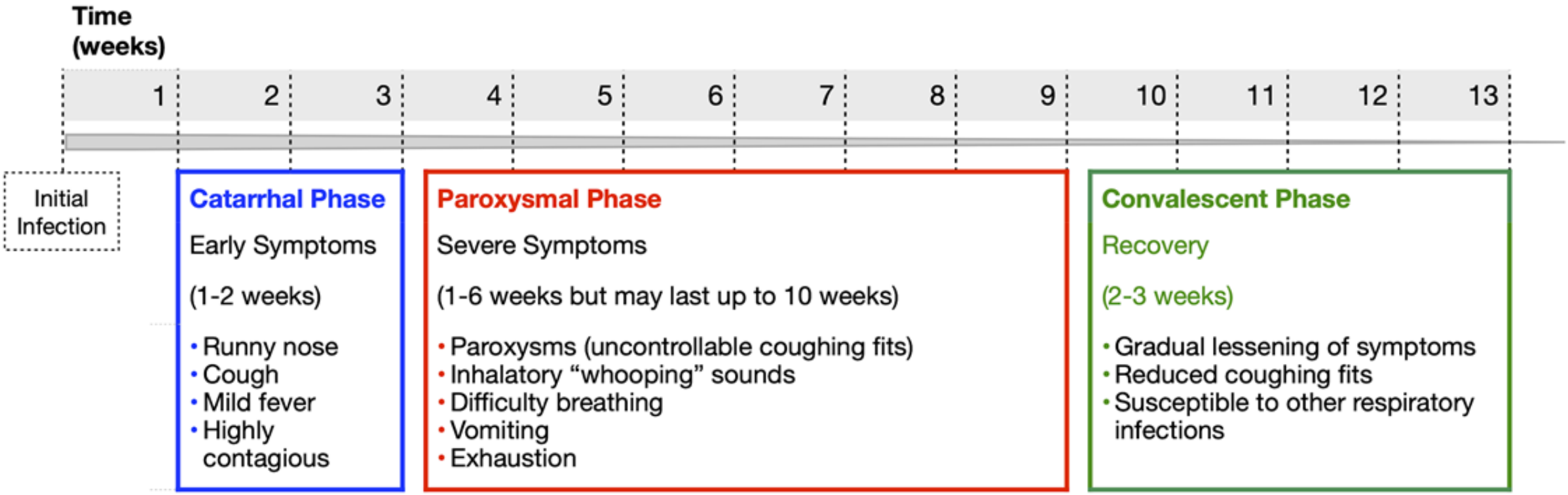
Severe pertussis in infants: a scoping review

Shuai Guo [a,b,c], Yu Zhu [a,b,c], Qin Guo [a,b,c], Chaomin Wan [a,]. 2024 May 10;56(1):2352606.
doi: 10.1080/07853890.2024.2352606


BORDETELLA PERTUSSIS
GRAM NEGATIVE COCCOBACILLI
GRAM STAIN
DROPLETS w/BACTERIA
SNEEZE COUGH
6FT


Incubation period
Asymptomatic
Catarrhal stage
Rhinorrhea
Mild cough
Paroxysmal stage
Cough + whoop
Lymphocytosis
Vomiting
Convalescent stage
Diagnostic sensitivity
100%
PCR
Culture
Serology/oral fluid
Clinical
7 - 10 days
1 - 2 weeks
3 - 8 weeks
6 - 12 weeks

Bordetella


Time (weeks)
1
2
3
4
5
6
7
8
9
10
11
12
13
Initial Infection
Catarrhal Phase
Early Symptoms
(1-2 weeks)
• Runny nose
• Cough
• Mild fever
• Highly contagious
Paroxysmal Phase
Severe Symptoms
(1-6 weeks but may last up to 10 weeks)
• Paroxysms (uncontrollable coughing fits)
• Inhalatory "whooping" sounds
• Difficulty breathing
• Vomiting
• Exhaustion
Convalescent Phase
Recovery
(2-3 weeks)
• Gradual lessening of symptoms
• Reduced coughing fits
• Susceptible to other respiratory infections

Kriticky choré dojča – zvýšené leukocyty korelujú so závažnosťou infekcie

- Apnoe
- Kŕče
- Komplikovaná pneumónia - WBC ≥30 000x10^9
  - Respiračné
  - Pľúcna hypertenzia
  - Kardiálne zlyhanie

Kritický choré dojča

- Penumónia
  - WBC - ≥30 000x10^9
- Výmenná transfúzia
  - Vek < 4 mesiace
  - WBC - ≥25 000x10^9
    - Kardiogénny šok, pľúcna hypertenzia, renálne zlyhnaie
  - WBC - ≥48 000x10^9, Lymfocyty ≥15 000x10^9
  - WBC - ≥30 000x10^9 Lymfocyty ≥15 000x10^9, nárast o 50% /24 hod
- ECMO

Bordetella

- Diagnostika
  - kultivácia
  - serológia
  - PCR

- Včasná ATB liečba môže znížiť závažnosť a dĺžku príznakov
- Eliminuje *B. pertussis* z nazofaryngu

Henry R, Dorman D, Skinner J, Mellis C. 1981. Limitations of erythromycin in whooping cough. *Med J Aust* **2:**108–109.

Liečba bez dokázaného efektu

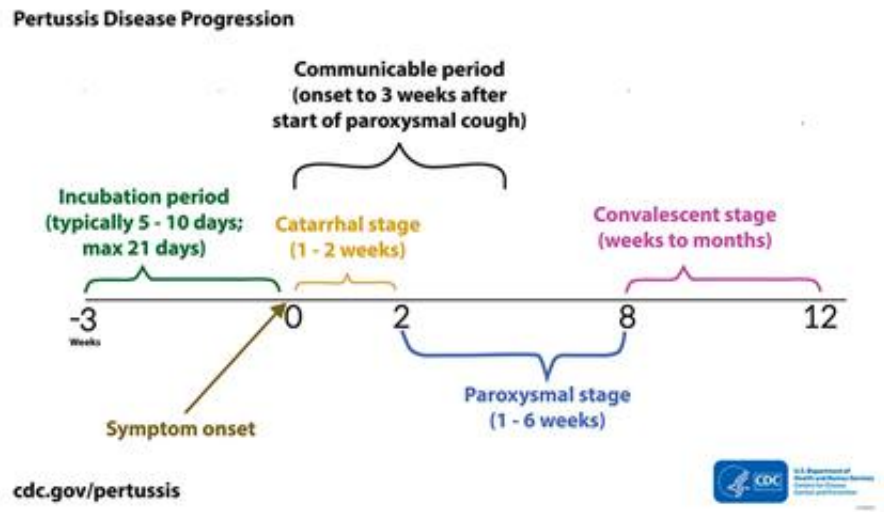
- kortikosteroidy
- beta 2-agonisti
- imunoglobulíny (pertussis immune globulin)
- antitusiká
- antihistaminiká

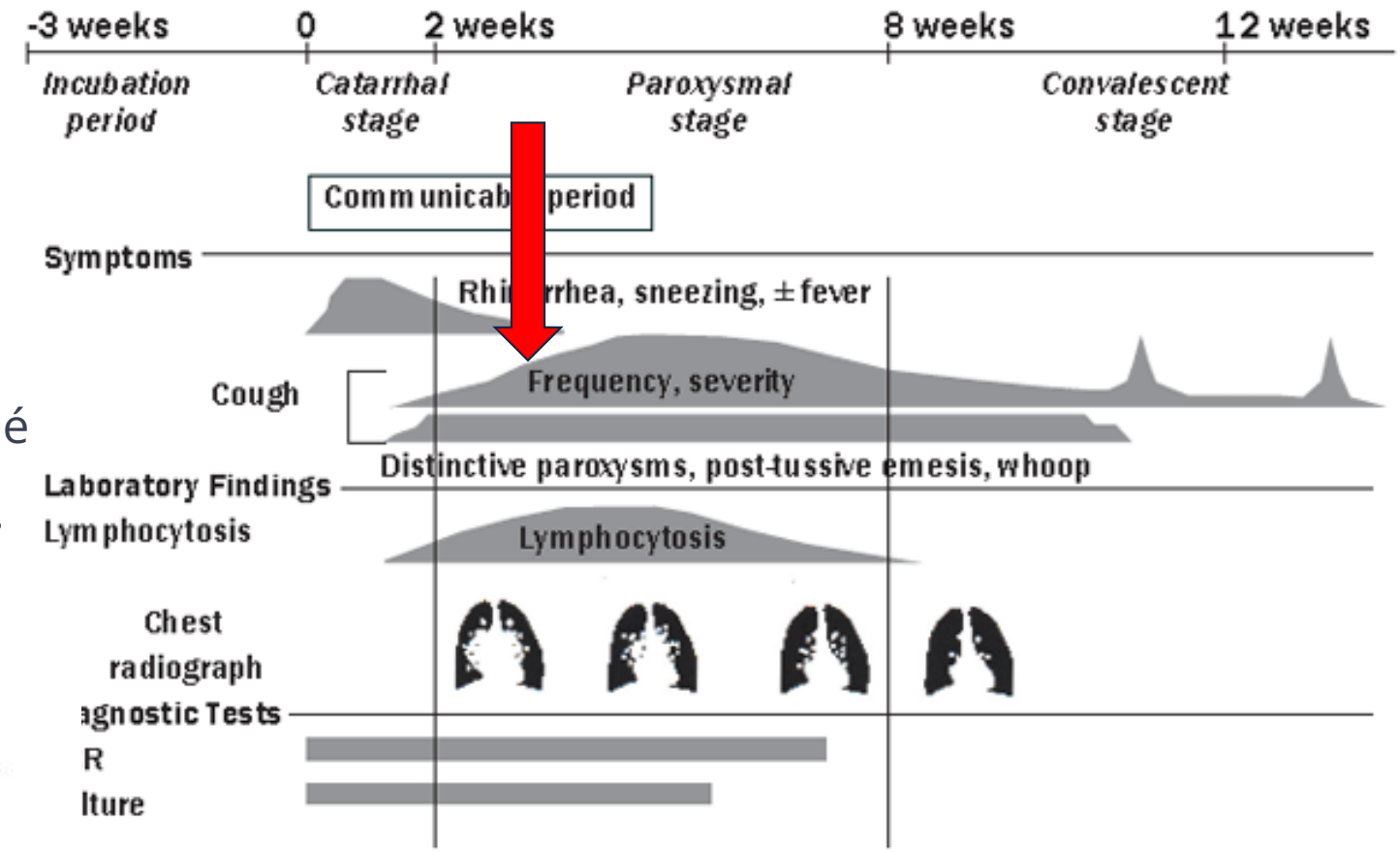
Bordetella

U detí, adolescentov a dospelých je potrebné začať liečbu do 3 týždňov od začiatku kašľa.

Bordetella

U detí ,adolescentov a dospelých je potrebné začať liečbu do 3 týždňov od začiatku kašľa.





pted from: Long S. *Principles and Practice of Pediatric Infectious Diseases*. 3rd ed. adelphia, PA: Churchill Livingstone/Elsevier; 2008. Centers for Disease Control. Pertussis ooping cough). Available at: http://www.cdc.gov/pertussis/clinical/diagnostic.html. Accessed uary 2011.

Azitromycín 5 dní - Erytromycín 14 dní - Klaritromycín 7 dní

Recommended oral antimicrobial treatment and postexposure prophylaxis for pertussis, by age group

Age group	Primary agents			Alternate agent*
	Azithromycin	Erythromycin	Clarithromycin	TMP-SMX
<1 month	Recommended agent; 10 mg/kg per day in a single dose for 5 days (only limited safety data available)	Not preferred; erythromycin is associated with infantile hypertrophic pyloric stenosis; use if azithromycin is unavailable; 40 mg/kg per day in 4 divided doses for 14 days	Not recommended (safety data unavailable)	Contraindicated for infants aged <2 months (risk for kernicterus)
1 through 5 months	10 mg/kg per day in a single dose for 5 days	40 mg/kg per day in 4 divided doses for 14 days	15 mg/kg per day in 2 divided doses for 7 days	Contraindicated at age <2 months; for infants aged ≥2 months, TMP 8 mg/kg per day, SMX 40 mg/kg per day in 2 divided doses for 14 days
Infants (aged ≥6 months) and children	10 mg/kg in a single dose on day 1 (maximum: 500 mg); then 5 mg/kg per day (maximum: 250 mg) on days 2 through 5¶	40 mg/kg per day in 4 divided doses for 7 to 14 days (maximum: 2 g per day)	15 mg/kg per day in 2 divided doses for 7 days (maximum: 1 g per day)	TMP 8 mg/kg per day, SMX 40 mg/kg per day in 2 divided doses for 14 days (maximum TMP 320 mg, SMX 1600 mg per day)
Adults (nonpregnant)Δ	500 mg in a single dose on day 1 then 250 mg per day on days 2 through 5¶	2 g (base) per day in 4 divided doses for 7 to 14 days	1 g per day in 2 divided doses for 7 days	TMP 320 mg per day, SMX 1600 mg per day in 2 divided doses for 14 days

TMP-SMX: trimethoprim-sulfamethoxazole (cotrimoxazole).

* TMP-SMX can be used as an alternative agent to macrolides in nonpregnant adults aged ≥2 months who are allergic to macrolides, who cannot tolerate macrolides, or who are infected with a rare macrolide-resistant strain of *Bordetella pertussis*. One double-strength tablet contains trimethoprim 160 mg with sulfamethoxazole 800 mg.

¶ A shorter course (ie, 3 days) of azithromycin for treatment or postexposure prophylaxis of *B. pertussis* has not been validated and is not recommended.

Δ Azithromycin is preferred in pregnancy.

Data from:

1. *American Academy of Pediatrics. Pertussis (whooping cough). In: Red Book: 2021-2024 Report of the Committee on Infectious Diseases, 32nd ed, Kimberlin DW, Barnett ED, Lynfield R, Sawyer MH (Eds), American Academy of Pediatrics, 2021. p.578.*
2. *Centers for Disease Control and Prevention. Recommended antimicrobial agents for the treatment and postexposure prophylaxis of pertussis. 2005 CDC guidelines. MMWR 2005; 54:10.*

Ďakujem za pozornosť