Erişkinde Pnömokok Aşılaması

8. Ulusal Erişkin Bağışıklama Sempozyumu

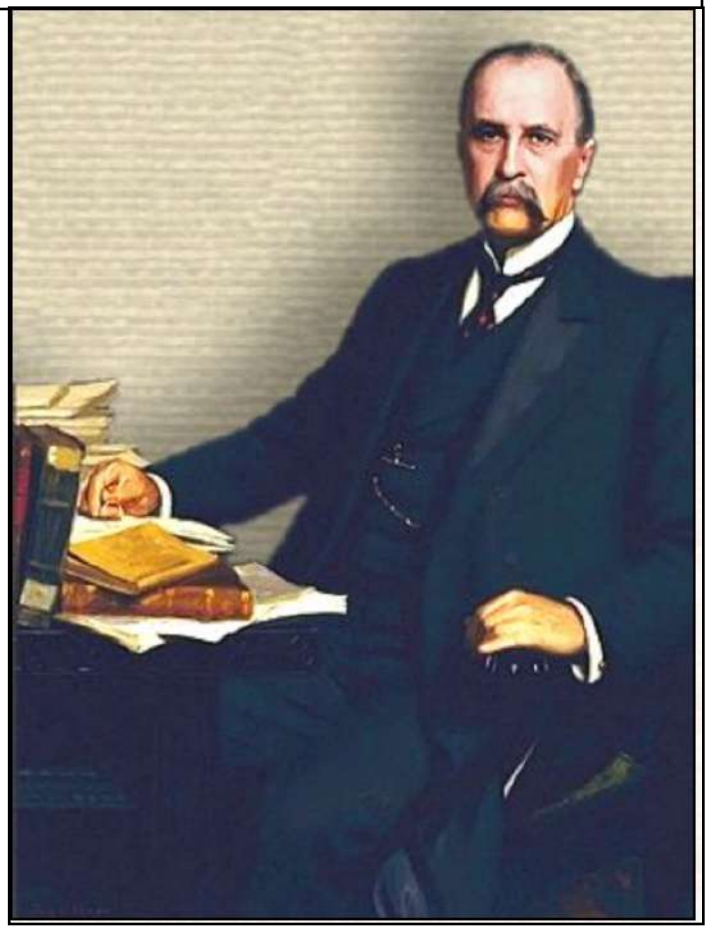
Dr. Ali Acar

Bayındır Sağlık Grubu

Pnömoni

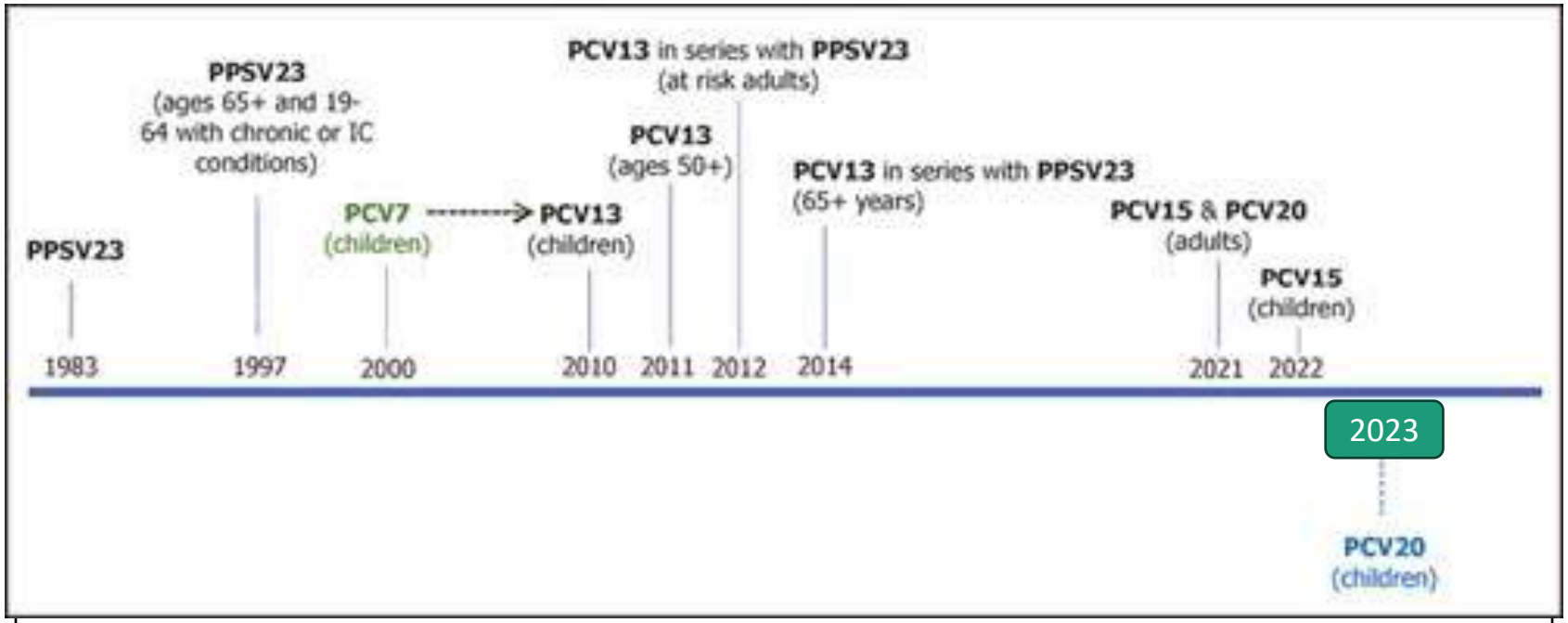
- Hippocrates 460 BC.
- Pasteur - 1881; S. *pneumoniae*
- Christian Gram - 1884

- Sir William Osler (1849-1919) described pneumonia as "the captain of the men of death."

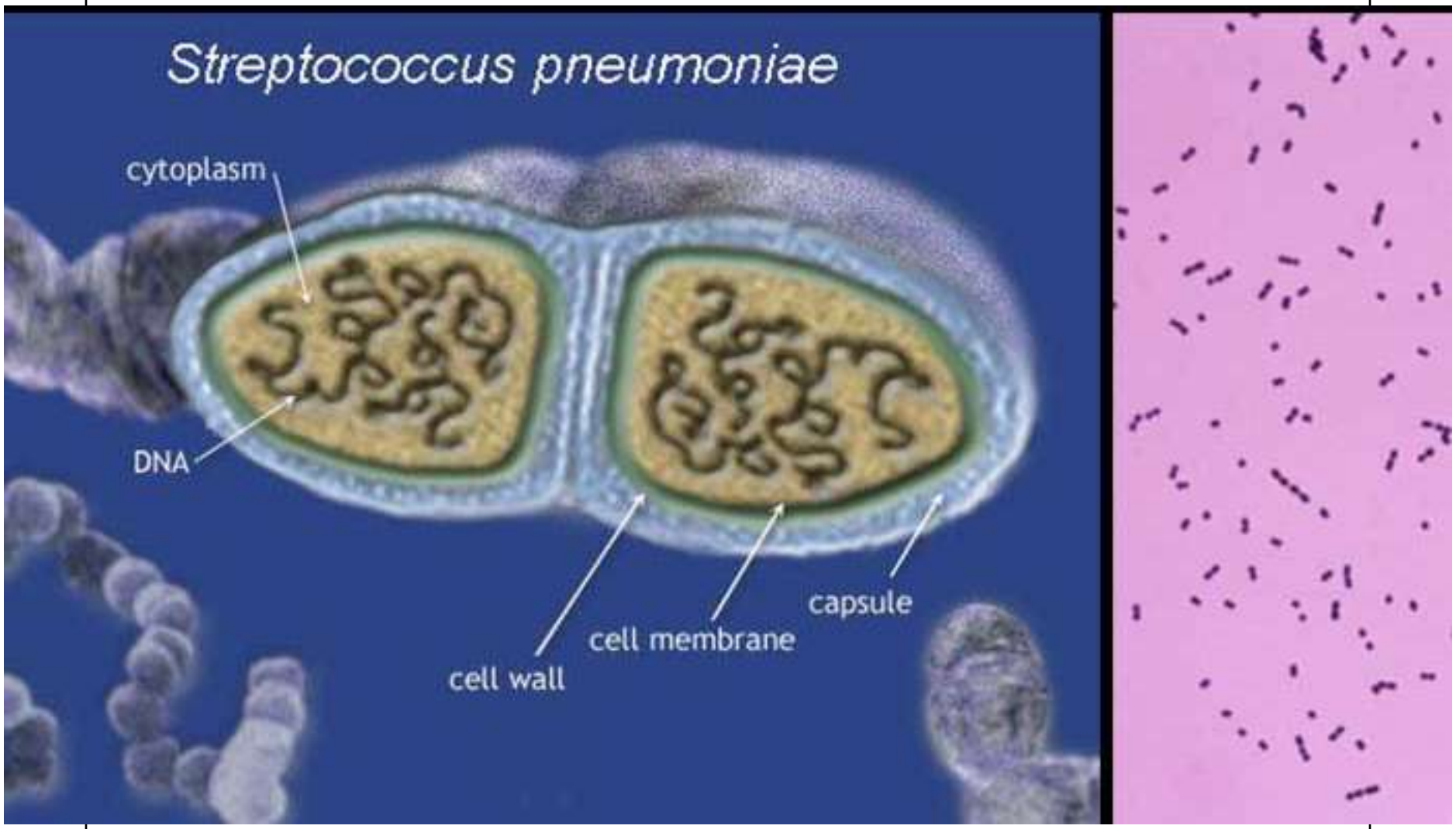


N Engl J Med 1997; 336:288-289

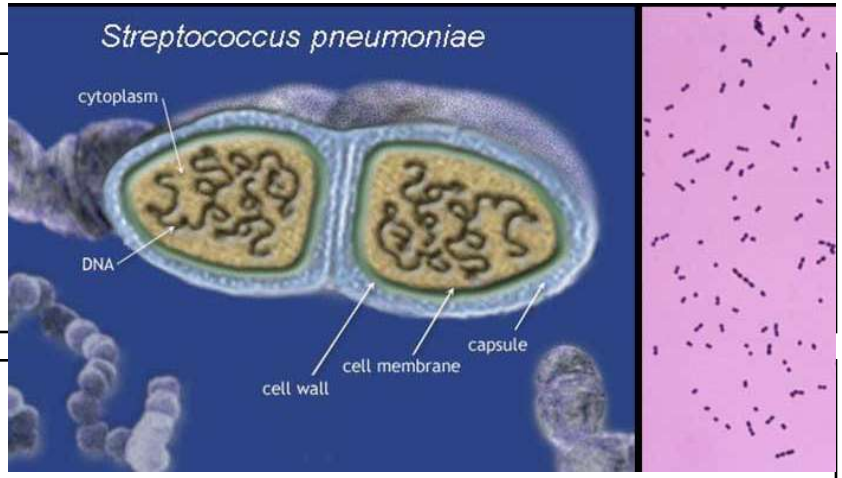
Pnömokok Aşıları



- 1909 – serotip spesifik tüm hücre ölü aşı
- 1940-Penisilin keşfi
- 1977 14 serotip kapsüler kapsuler ilk lisanslı aşı


Streptococcus pneumoniae
cytoplasm
DNA
cell wall
cell membrane
capsule

100 serotip



Serotype no.	Serotype name	Chemical structure	Accession no. for *cps*	Year	Reference
91	6C	6C has repeating units of 6A, except the galactose residue is replaced with a glucose residue	EF538714	2007	11
92	11E	11E has repeating units of 11A except O-acetylation of a 1-phosphoglycerol	GU074953	2010	54
93	20B	20B has repeating unit of 20A with an extra branching glucose residue	JQ653093	2012	55
94	6D	6D has repeating units of 6C except rhamnose-(1→4)-ribitol linkage	HM171374	2013	46
95	6F	6F has both 6A and 6C repeating units	KC832410	2013	46
96	6G	6G has both 6B and 6D repeating units	KC832411	2013	46
97	6H	6H has both 6A and 6B repeating units	KJ874439	2015	56
98	35D	35D has repeating units of 35B without O-acetyl group at one Gal*f*	KY084476	2017	46
99	7D	7D has 5:1 combination of 7C and 7B repeating units	NA[a]	2018	57
100	10D	See Fig. 4	ERR051587	2019	This study

[a] NA, not available.

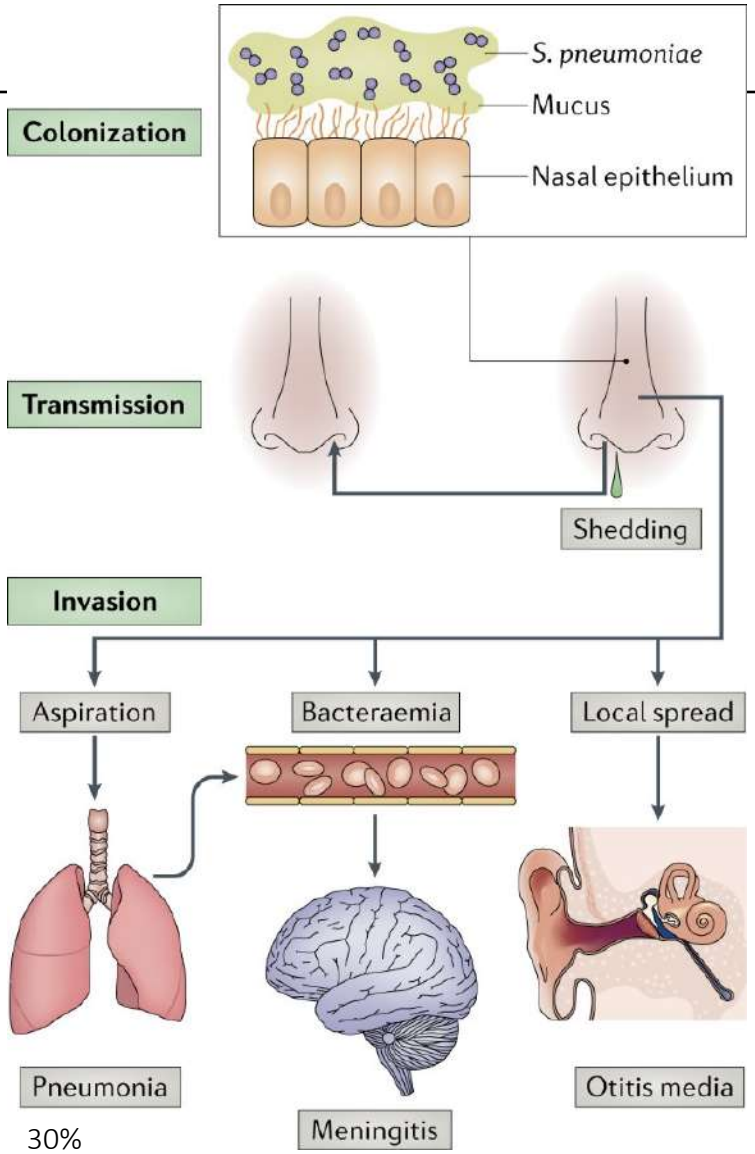
*Ganaie, et al. A New Pneumococcal Capsule Type, 10D, Is the 100th Serotype and Has a Large Cps Fragment from an Oral Streptococcus. mBio **2020**, 11, e00937-20.*

Streptococcus pneumoniae hayat döngüsü ve pnömokokal hastalık patogenezi

Taşıyıcılık

Sağlıklılarda	:	%5-90
Okul öncesi çocuklar:		%20-60
Yetişkinlerde	:	%5-10
Askeri birlik	:	%20-60

WHO 2017- *S. pneumoniae* önceliği olan 12 patojenden biri. Yüksek insidansı, Pen ve diğer antb direncinde artış, korunmada önceliklendirilmeli



Weiser, J.N. *Streptococcus pneumoniae*: transmission, colonization and invasion. *Nat Rev Microbiol* **16**, 355–367 (2018).

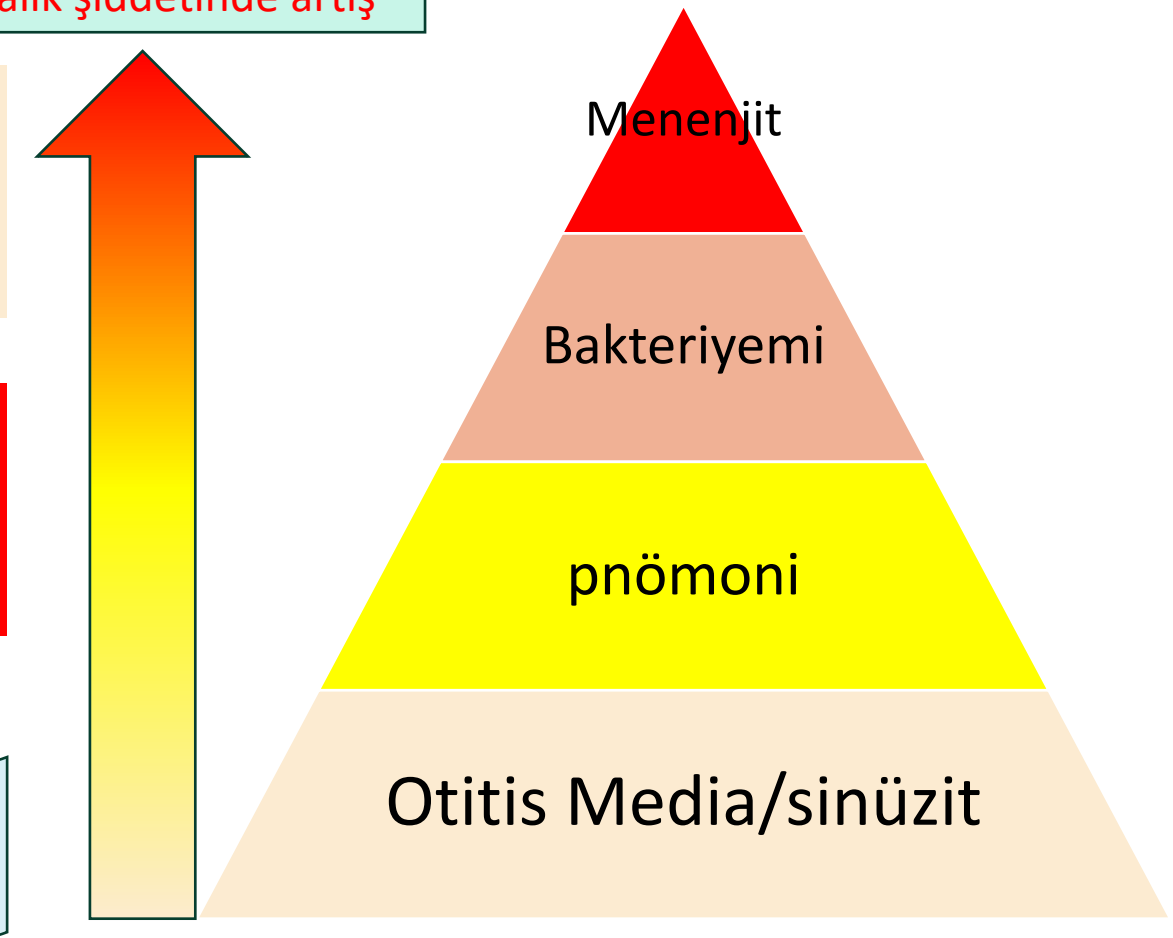
Pnömokokal hastalık

Hastalık şiddetinde artış

Noninvazif PH:
- Akut otitis media (AOM)
- Sinüzit
- Non-bakteriyemik pnömoni

invazif PH (IPH):
- Bakteriyemik pnömoni
- Menenjit
- Bakteriyemi

Normalde steril olan bölgelerde

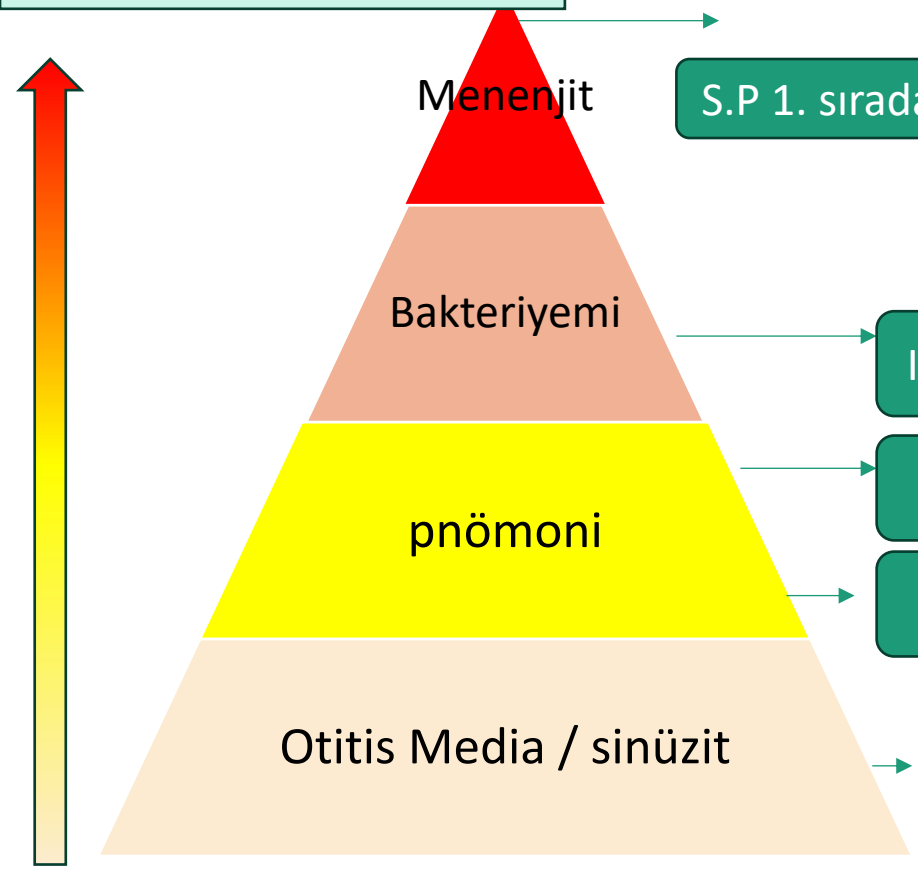


Pnömokokal hastalık

Country	Period	Incidence Rate
Canada (Calgary)[22]	2003–2007	23.9
USA[23]	2007	37.9
Norway[24]	2008	64.6
Netherlands[25]	2006–2008	60.2
Spain (Barcelona)[26]	2005–2007	56.2
Spain (Tarragona)[27]	2006–2009	59.6
USA[28]	2010	36.4
European countries[29]	2009	9.84
Australia (Sydney)[30]	2006–2010	24
UK[31]	2009	16.4

IPH insidans; 100 bin

Hastalık şiddetinde artış



S.P 1. sırada

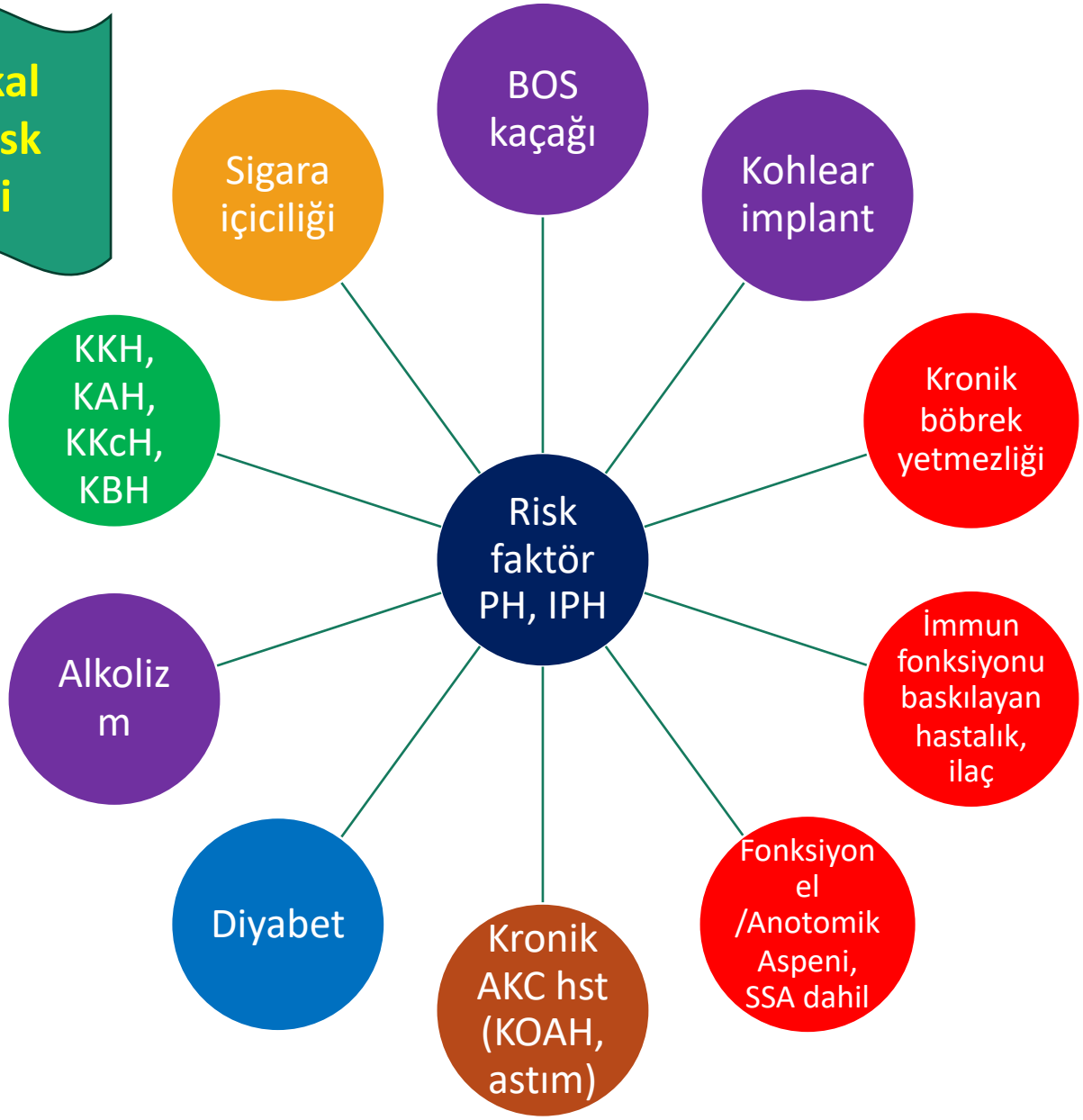
IPH %80-90 Bakteriyemik pnömoni

%20-30 bakteriyemik

En sık TKP 30%

AOM 800 Milyon/yıl,
S. pneumoniae en sık etken
PCV13 ile insidansı AOM %50, Sinüzit %20 azaldı

Pnömokokal Hastalık Risk Faktörleri



Pnömokokal Hastalık Riski

Table 2: Increased risk of invasive pneumococcal disease in diseased conditions

Disease category	Fold increase
Diabetes mellitus	3.4
Chronic lung disease	5.6
Chronic heart disease	6.4
Alcoholism	11.4
Solid cancers	22.9
Hematological cancers	38.3
Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome	48.4

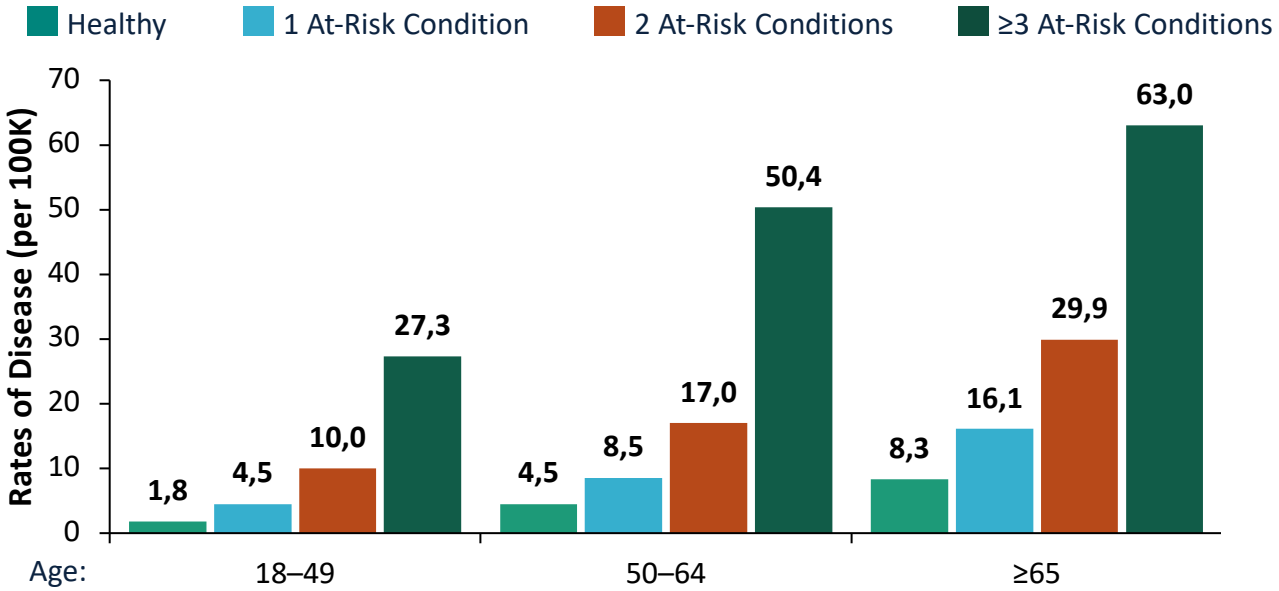
Kyaw MH, Rose CE, Jr, Fry AM et al. The influence of chronic illnesses on the incidence of invasive pneumococcal disease in adults. J Infect Dis 2005;192;377-86.

Fonksiyonel veya anatomik aspleni, özellikle de orak hücreli anemi IPH riskini 50 kat artırır

https://www.cdc.gov/pneumococcal/clinicians/risk-factors.html

Risk yığılması

Invasive pneumococcal disease



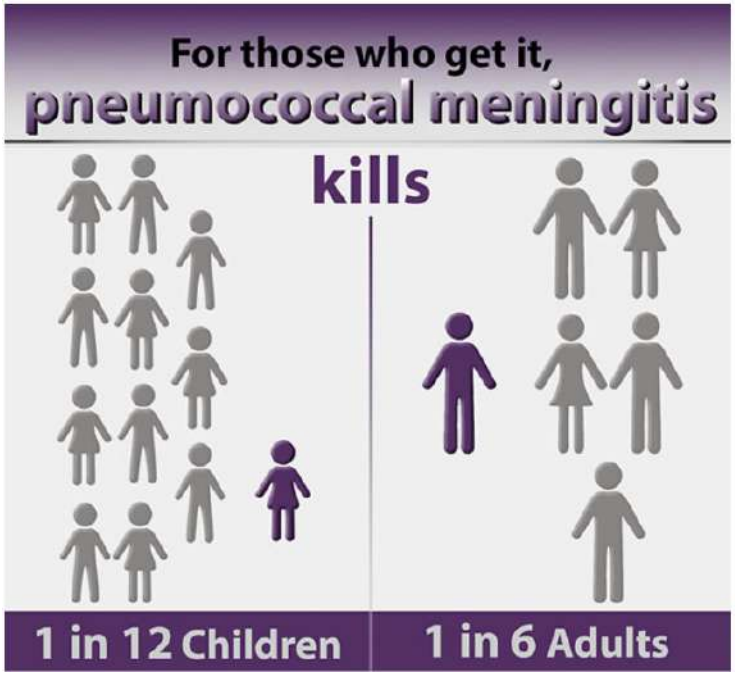
No. Person-Years	42.5M	5.0M	599.9K	117.0K	21.0M	6.0M	1.3M	369.1K	5.4M	132.2K	14.0K	18.7K
Rate Ratios[b]	–	2.5	5.4	14.9	–	1.9	3.8	11.3	–	1.9	3.6	7.6
(95% CIs)	–	(2.1–2.9)	(4.2–7.1)	(10.5–21.2)	–	(1.9–2.1)	(3.3–4.4)	(9.7–13.2)	–	(1.7–2.2)	(3.1–4.1)	(6.4–8.9)

Shea KM, Edelsberg J, Weycker D, Farkouh RA, Strutton DR, Pelton SI. Rates of pneumococcal disease in adults with chronic medical conditions. *Open Forum Infect Dis*. 2014.

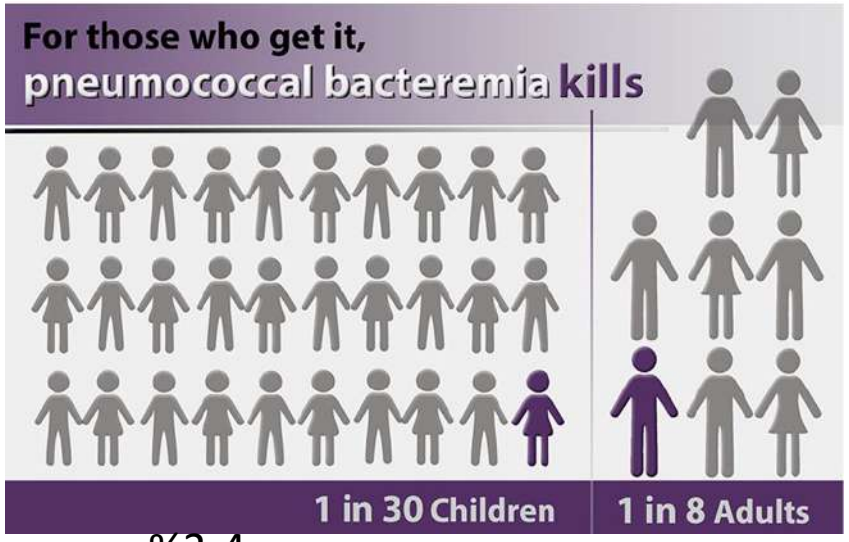
Yetişkinde daha ölümcül

Yetişkin

1. Pnömoni en sık klinik tablo
   - %30 / tüm pnömoni
2. Bakteriyemi
   - Pnömoni ile birlikte mortalite %10
   - Kaynak (?) mortalite %14
   - Artrit, menenjit, endokardit ,
3. Menenjit
   - Mortalite %14
   - Kalıcı sekel %25



%8-9 %16-20



%3-4 %12-15

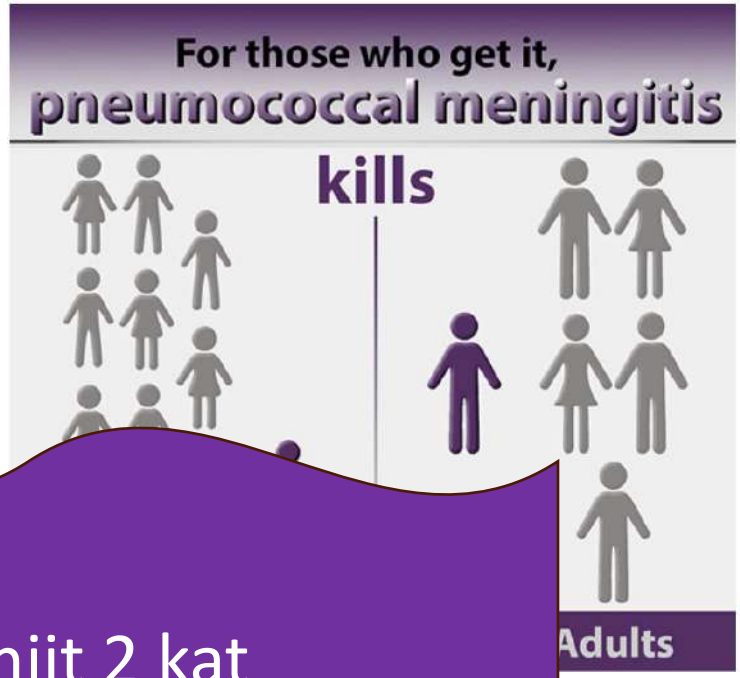
Edmond K, et al. Global and regional risk of disabling sequelae from bacterial meningitis: a systematic review and meta-analysis. Lancet Infect Dis. 2010;10(5):317–28.

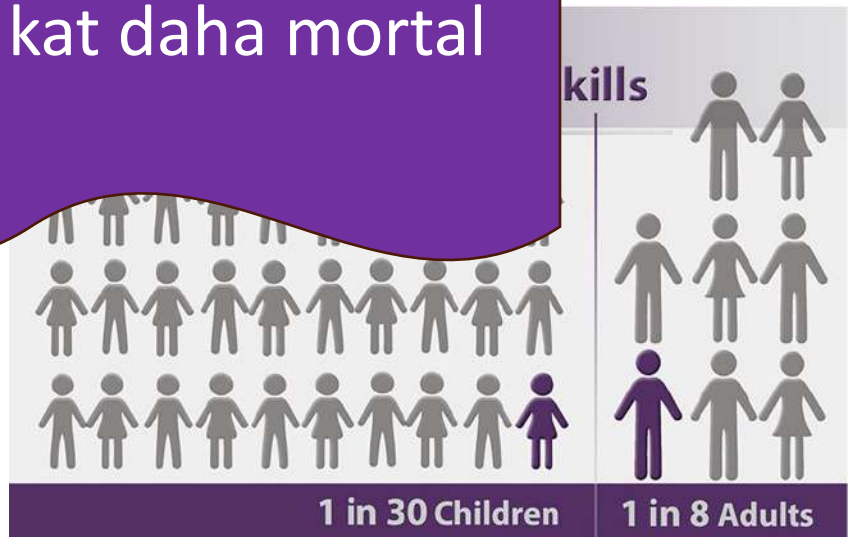
Yetişkinde daha ölümcül

Yetişkin

1. Pnömoni en sık klinik tablo
   - %30 / tüm p
2. Bakteriyemi
   - Pnömoni ile
     %10
   - Kaynak (?) r
   - Artrit, mene
3. Menenjit
   - Mortalite %
   - Kalıcı sekel

Menenjit 2 kat
Bakteriyemi 4 kat daha mortal





Edmond K, et al. Global and regional risk of disabling sequelae from bacterial meningitis: a systematic review and meta-analysis. Lancet Infect Dis. 2010;10(5):317–28.

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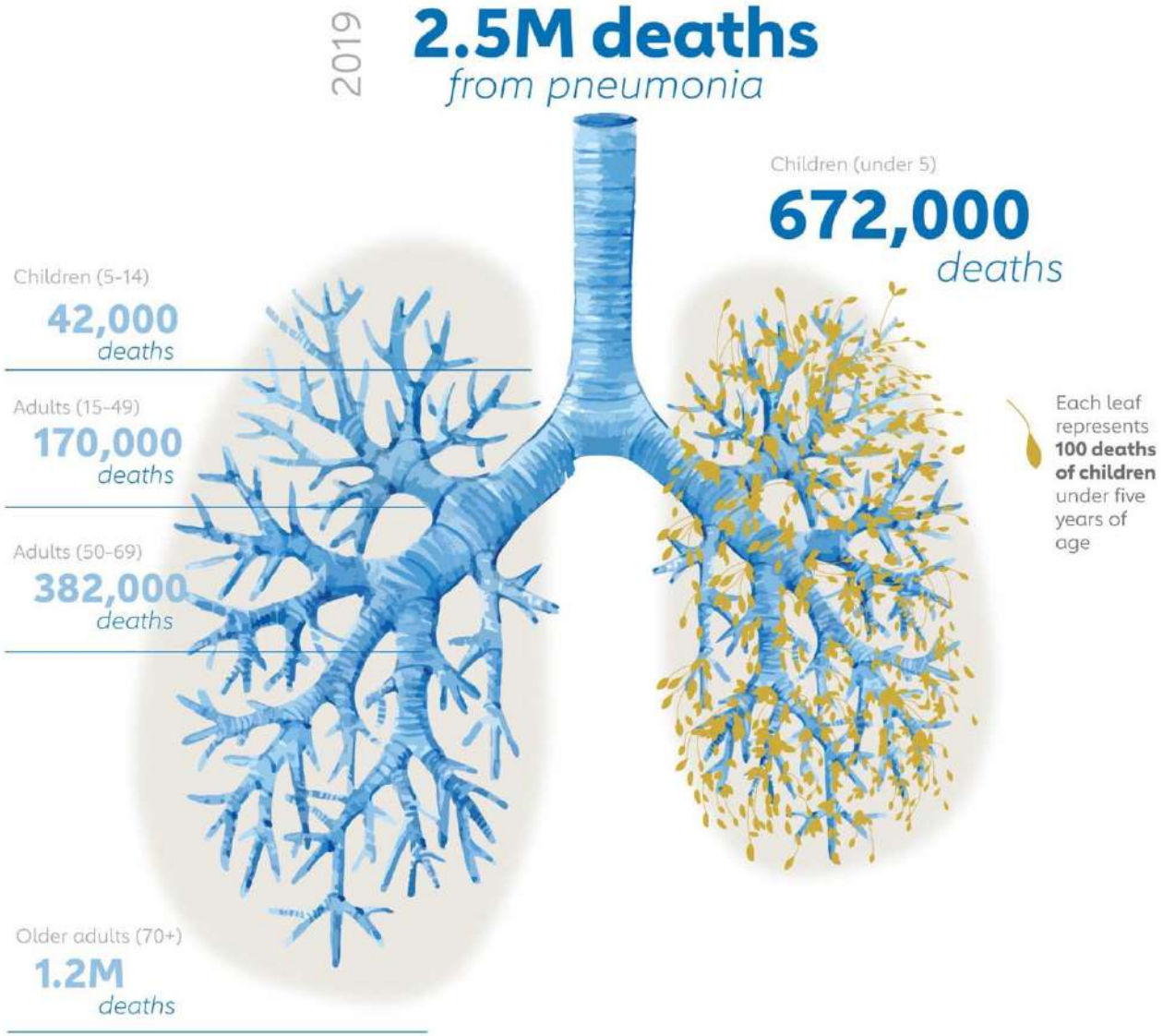
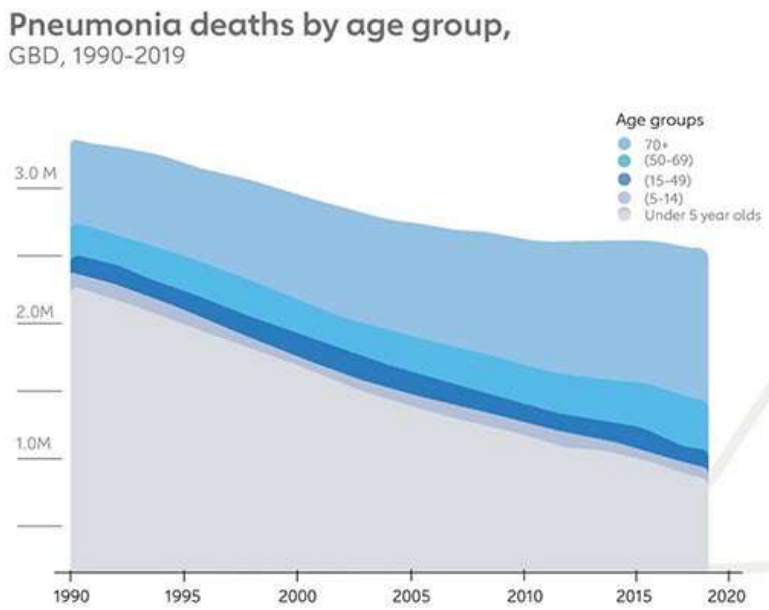
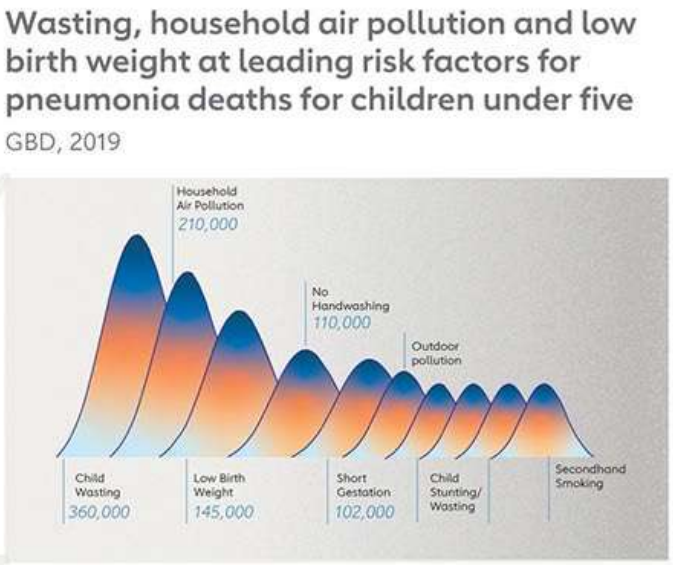


Global Burden of Disease, 2019. https://www.healthdata.org/gbd/2019

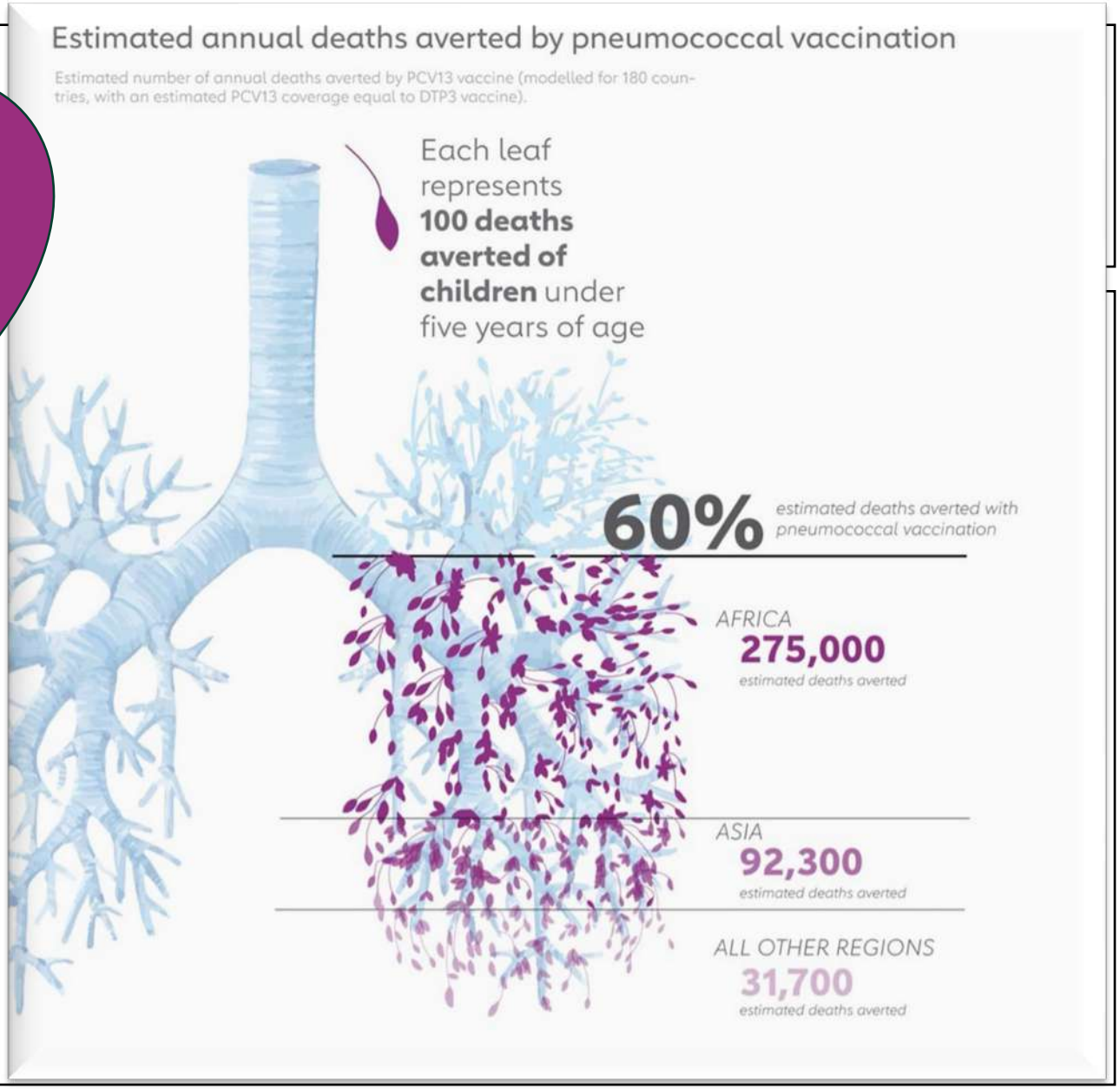
PH'larda Bimodal dağılım





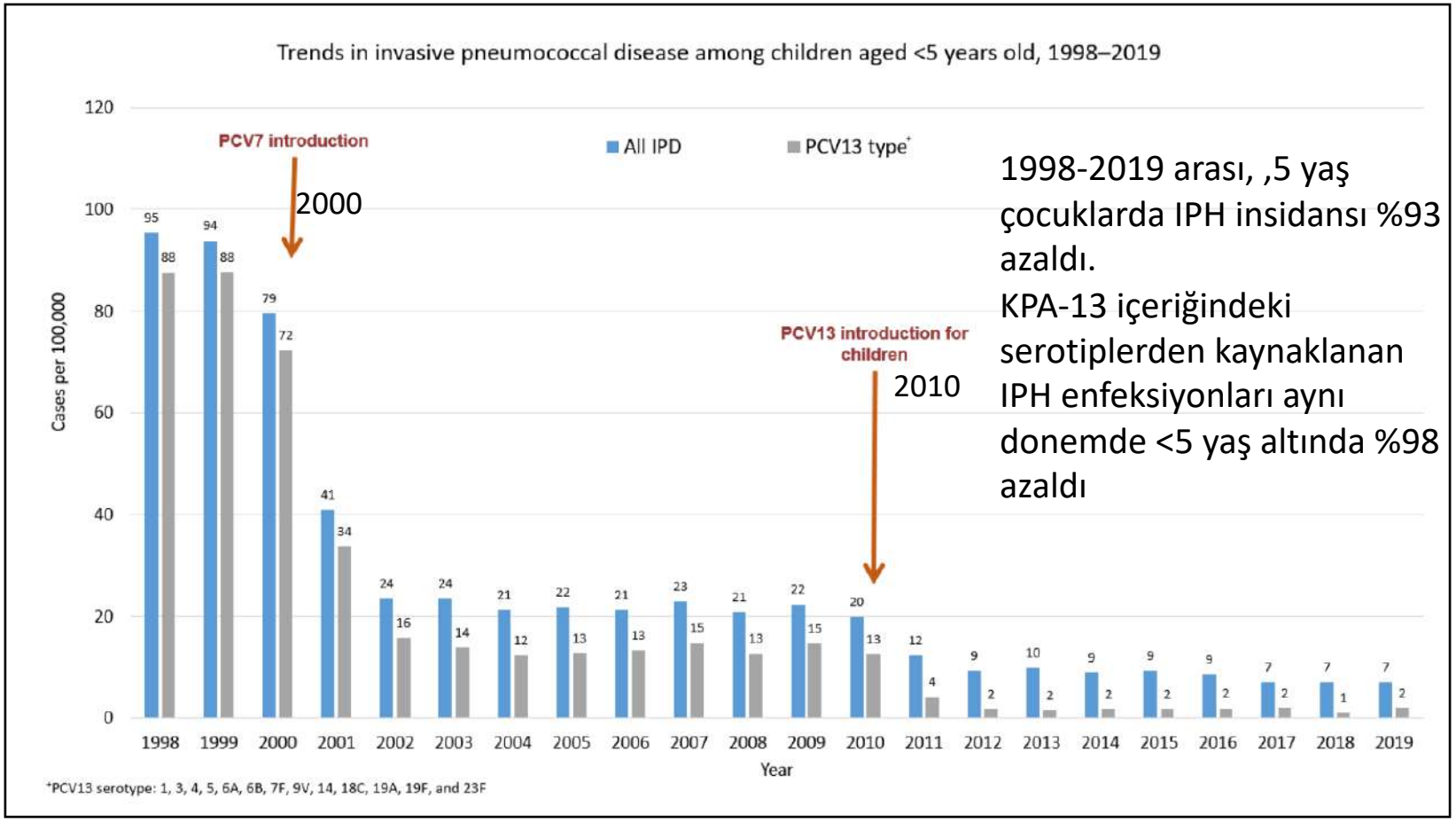
Global Burden of Disease, 2019. https://www.healthdata.org/gbd/2019

Pnömokok Aşısı yapılırsa ?



Global Burden of Disease, 2019. https://www.healthdata.org/gbd/2019

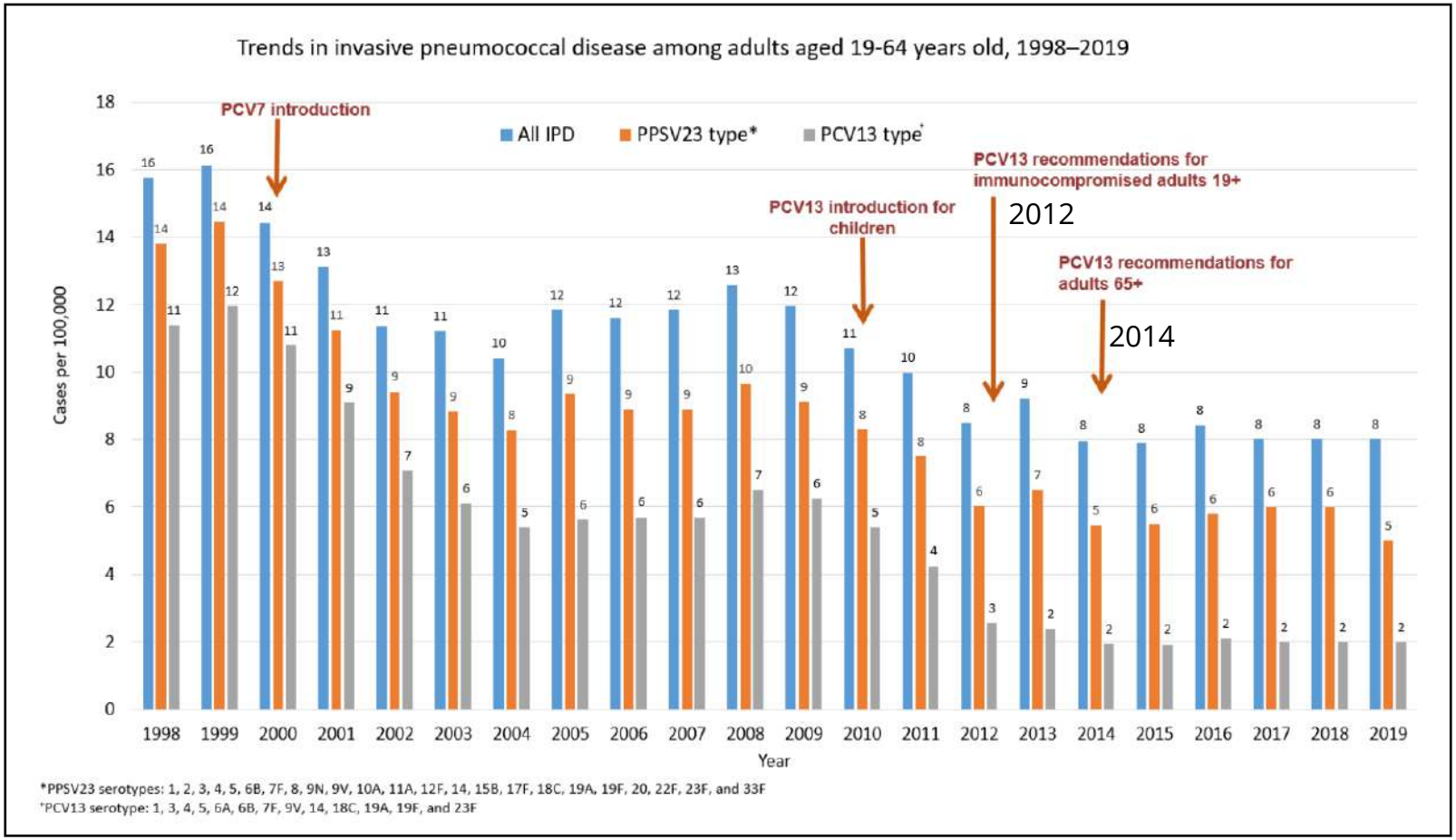
<5 yaş IPH trendi



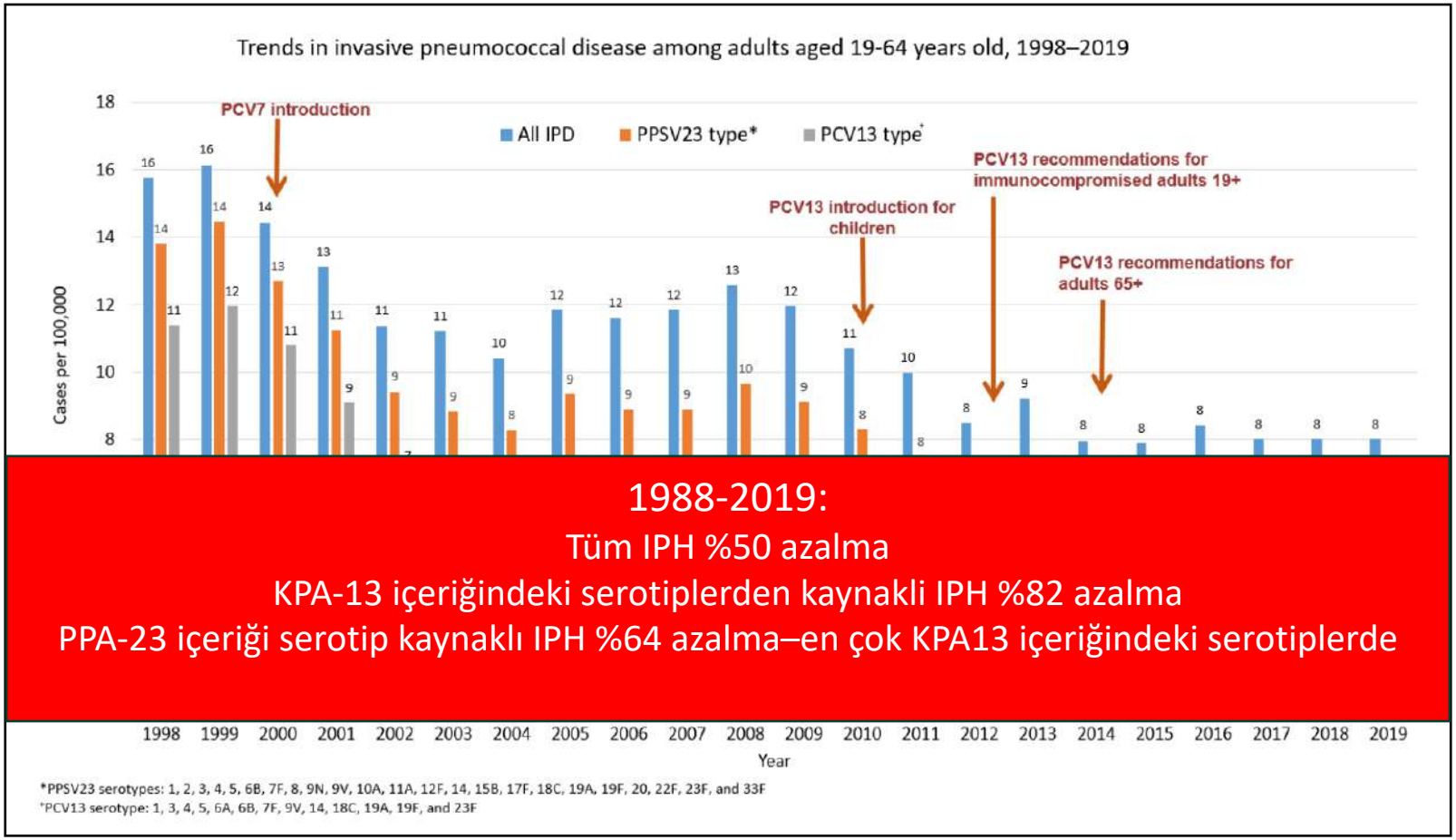
1998-2019 arası, ,5 yaş çocuklarda IPH insidansı %93 azaldı.

KPA-13 içeriğindeki serotiplerden kaynaklanan IPH enfeksiyonları aynı donemde <5 yaş altında %98 azaldı

19-64 yaş IPH trendi



19-64 yaş IPH trendi



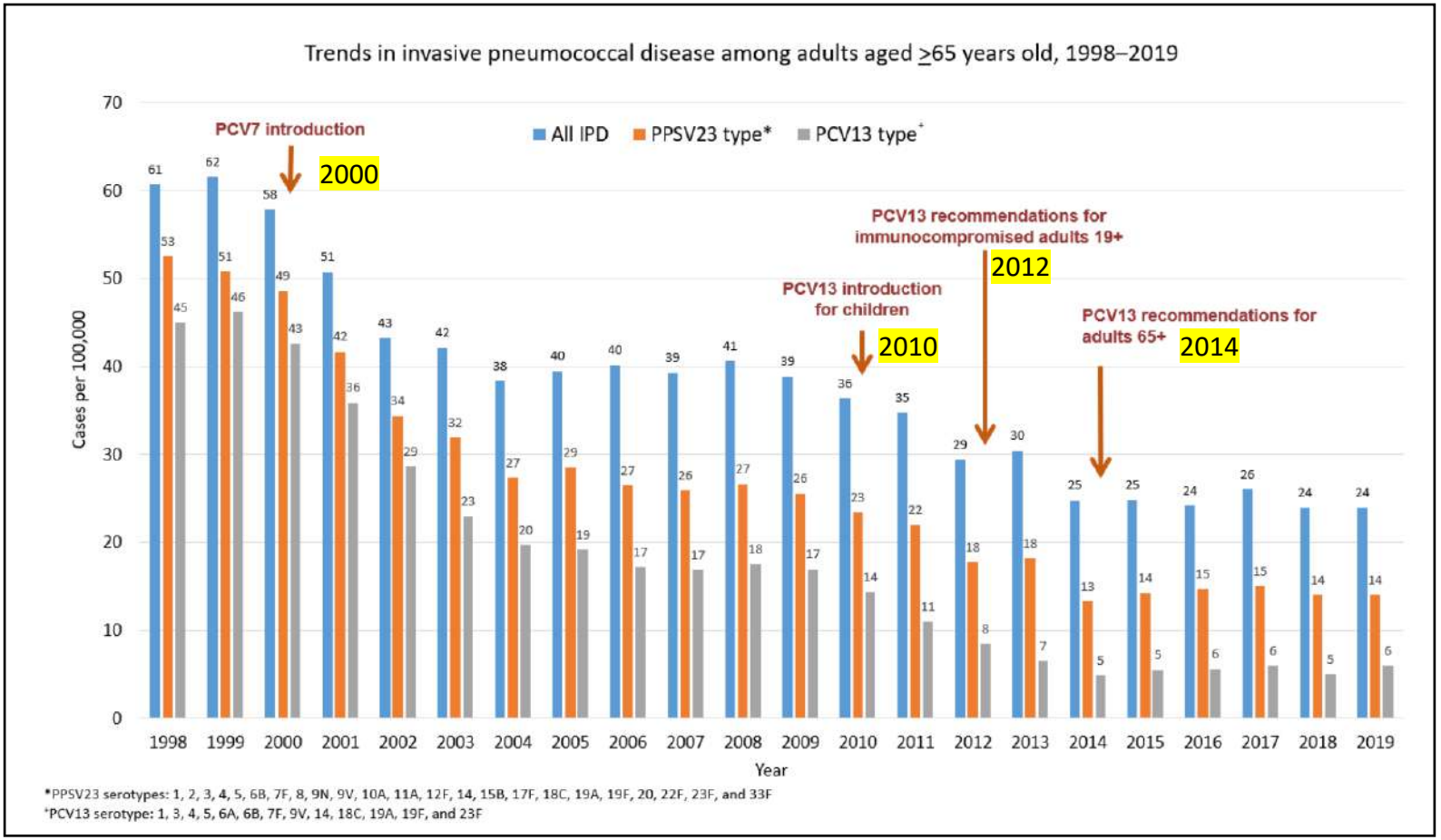
1988-2019:

Tüm IPH %50 azalma

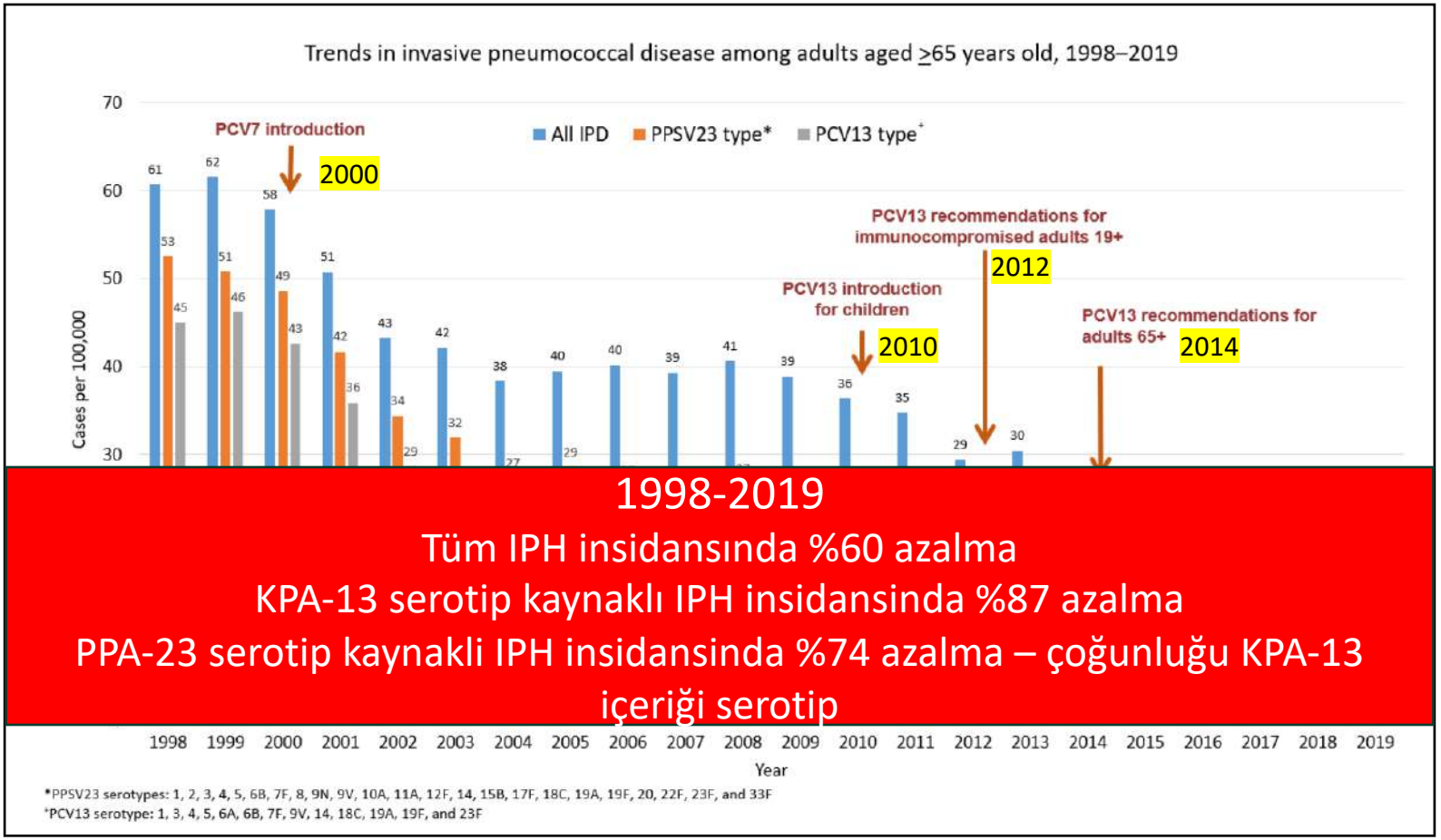
KPA-13 içeriğindeki serotiplerden kaynakli IPH %82 azalma

PPA-23 içeriği serotip kaynaklı IPH %64 azalma–en çok KPA13 içeriğindeki serotiplerde

≥ 65 Yaş IPH trendi



≥ 65 Yaş IPH trendi



1998-2019

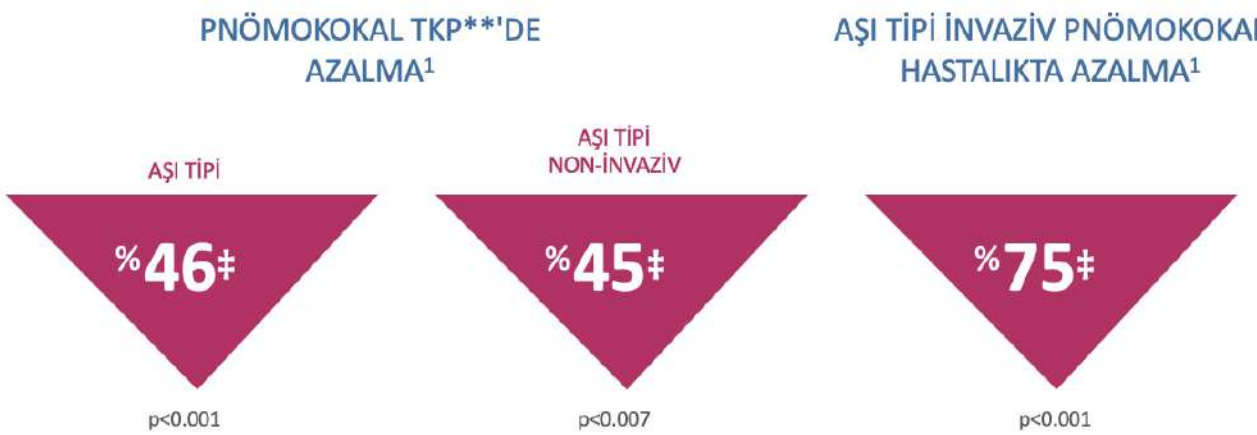
Tüm IPH insidansında %60 azalma

KPA-13 serotip kaynaklı IPH insidansinda %87 azalma

PPA-23 serotip kaynakli IPH insidansinda %74 azalma – çoğunluğu KPA-13 içeriği serotip

CAPITA
(Community-Acquired Pneumonia Immunzation Trail in Adults)

Aşı serotiplerinin neden olduğu pnömokokal toplumda gelişen pnömoni ve invaziv pnömokok hastalığının önlenmesinde KPA13®'ün etkinliğinin değerlendirildiği Faz IV, çift kör, randomize, plasebo kontrollü, klinik çalışma1,2 ≥65 yaş aşılanmamış 84.496 erişkin

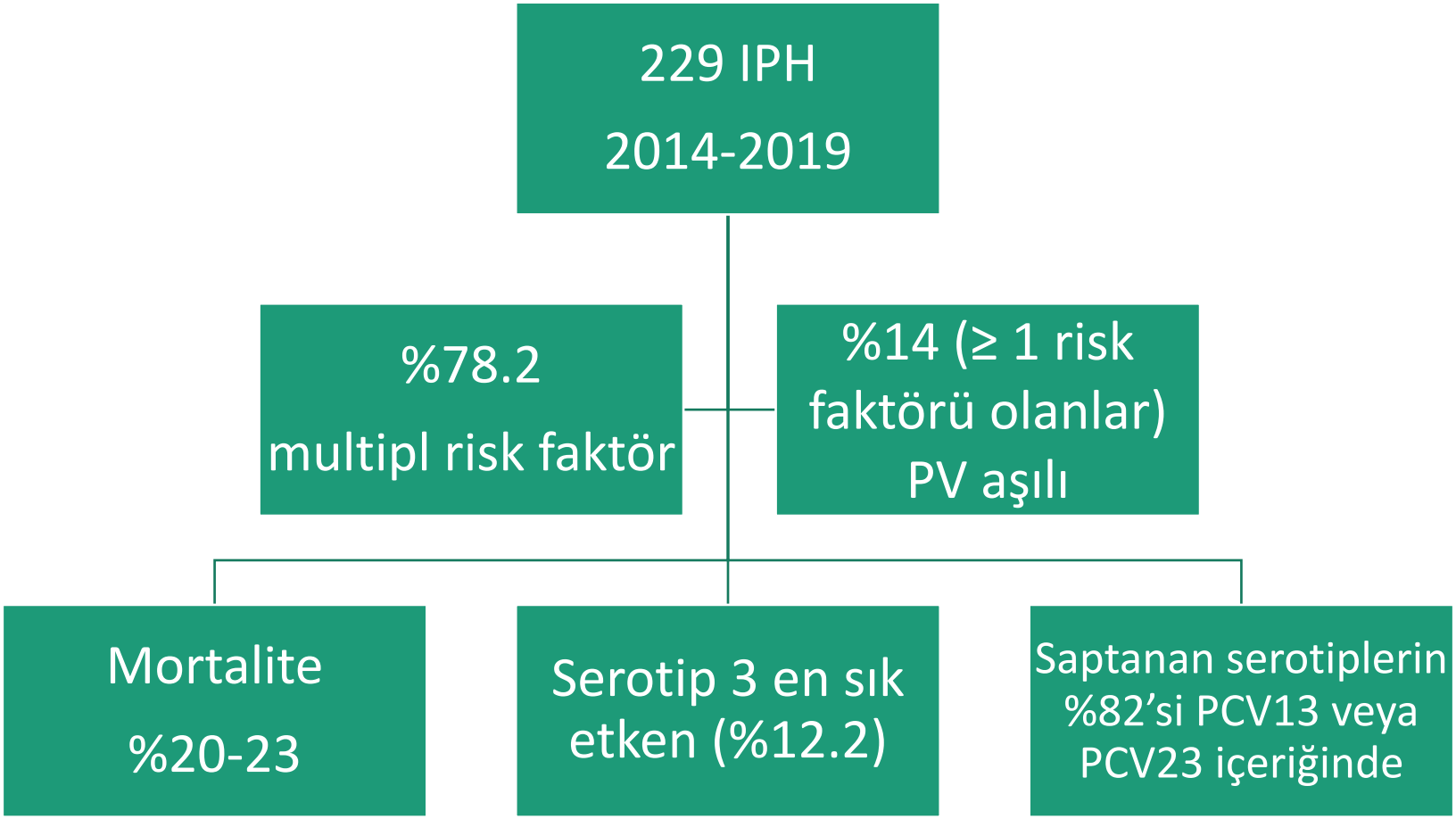


CAPiTA (The Community-Acquired Pneumonia Immunization Trial in Adults) Çalışması, 65 yaş ve üzeri 84,496 erişkin ile Eylül 2008-2010 yılları arasında yapılan, aşı serotiplerinin neden olduğu pnömokokal toplumda gelişen pnömoni ve invaziv pnömokok hastalığının önlenmesinde 13 valanlı konjüge pnömokok aşısının etkinliğinin değerlendirildiği Faz IV, randomize, plasebo kontrollü, klinik çalışmasının verileri kullanılmıştır.[1,2]

1. Bonten MJM. et al. Polysaccharide Conjugate Vaccine against Pneumococcal Pneumonia in Adults. The New England Journal of Medicine. 2015; 372:1114-1125
2. Hak E et al. Rationale and design of CAPiTA: a RCT of 13-valent conjugated pneumococcal vaccine efficacy among older adults. The Netherlands Journal of Medicine. 2008;66(9):371-383.

Pnömokok aşıları hayat kurtarır

Schulz PS. Missed pneumococcal vaccination opportunities in adults with invasive pneumococcal disease in a community health system. *Open Forum Infect Dis.* 2022



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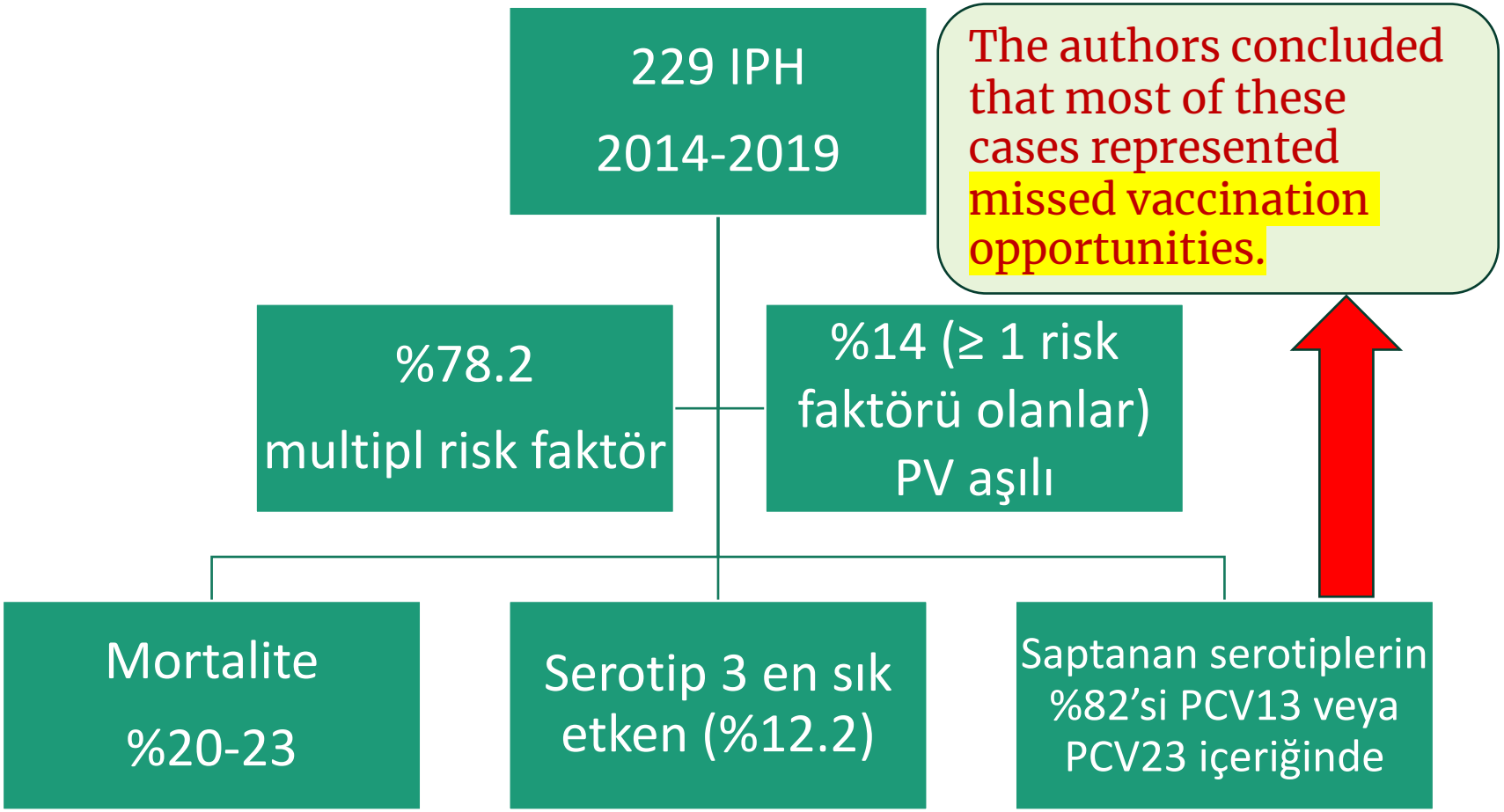
Schulz PS. Missed pneumococcal vaccination opportunities in adults with invasive pneumococcal disease in a community health system. *Open Forum Infect Dis.* 2022



Pnömokok Aşıları

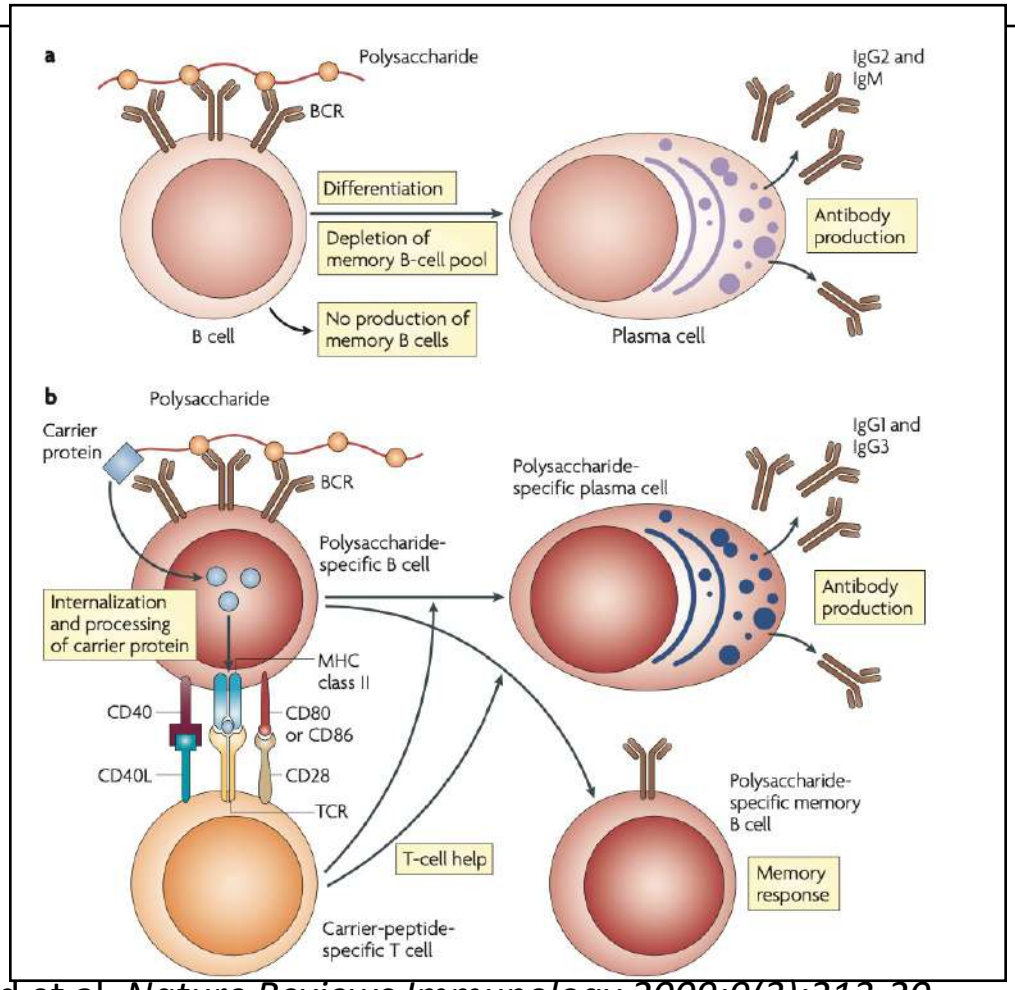
- 2 tip pnömokokal aşı
  - pneumococcal polysaccharide vaccine (PPSV)
  - pneumococcal conjugate vaccine (PCV)

Comparison of properties of the pneumococcal polysaccharide and conjugate vaccines

	Polysaccharide vaccine	Conjugate polysaccharide vaccine
Stimulates antibodies in infants and toddlers	No	Yes
Stimulates antibodies in healthy adults	Yes	Yes
Stimulates antibodies in immunocompromised adults	+/-	+/-
Antibodies are long-lasting	+/-	+/-
Primes immunologically for enhanced responses	No	Possibly
Stimulates mucosal immunity, resulting in decreased colonization	No	Yes
Exhibits herd effect (secondary protection of unvaccinated individuals)	No	Yes
Use is associated with replacement strains	No	Yes

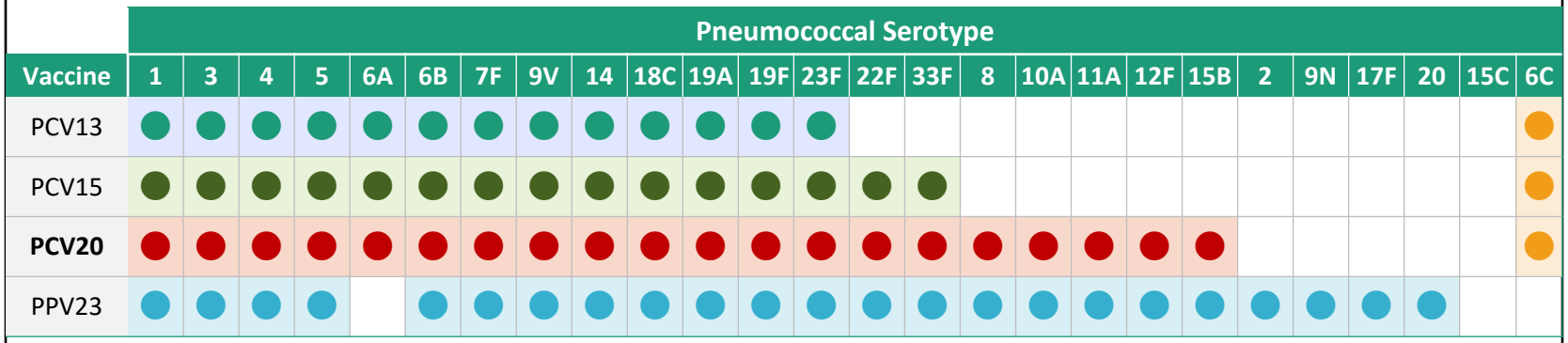
Graphic 87568 Version 1.0

Konjuge / polisakkarit aşı



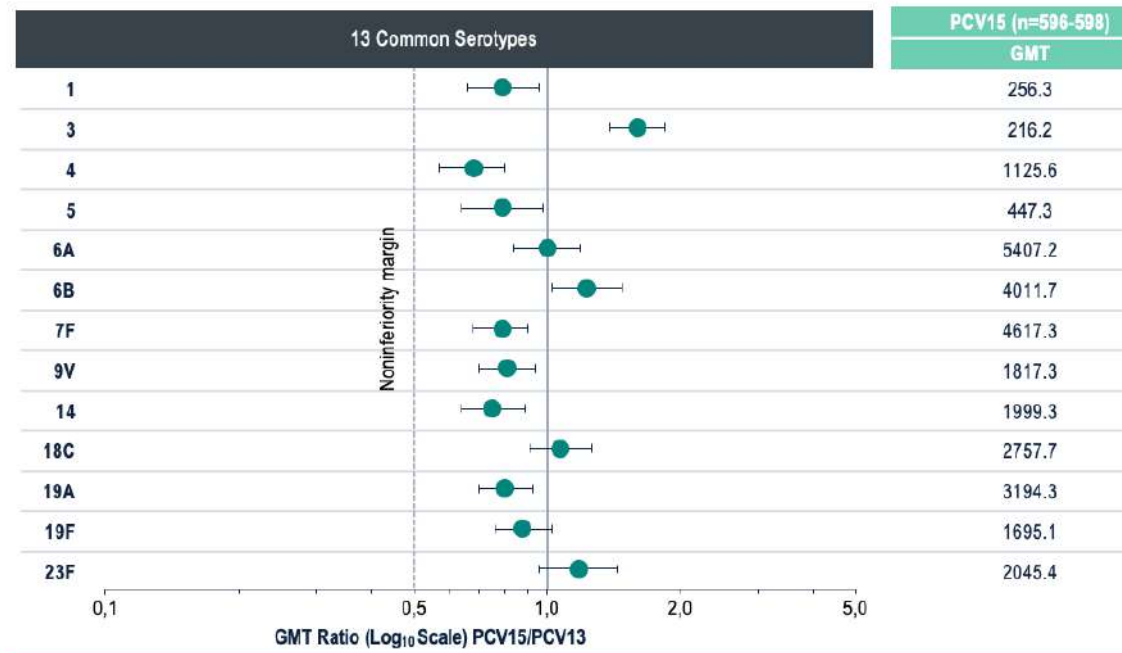
Pollard et al. *Nature Reviews Immunology 2009;9(3):213-20*

Pnömokok Aşıları



Vaccine	Pneumococcal Serotype																							
	1	3	4	5	6A	6B	7F	9V	14	18C	19A	19F	23F	22F	33F	8	10A	11A	12F	15B	2	9N	17F	20	15C	6C
PCV13	●	●	●	●	●	●	●	●	●	●	●	●	●													●
PCV15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											●
PCV20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						●
PPV23	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

PCV15 bağışıklık sağlayıcılık (Immunogenicity)



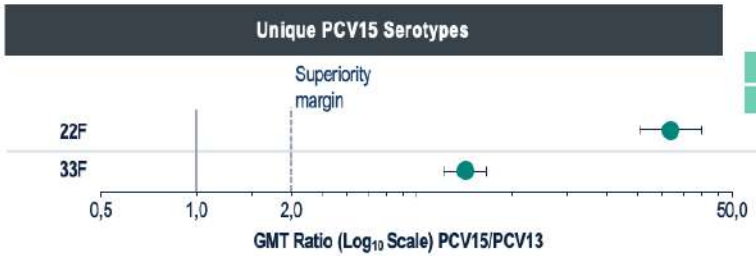
13 Common Serotypes	PCV15 (n=596-598) GMT	PCV13 (n=597-598) GMT	GMT Ratio (95% CI)
1	256.3	322.6	0.79 (0.66, 0.96)
3	216.2	135.1	1.60 (1.38, 1.85)
4	1125.6	1661.6	0.68 (0.57, 0.80)
5	447.3	563.5	0.79 (0.64, 0.98)
6A	5407.2	5424.5	1.00 (0.84, 1.19)
6B	4011.7	3258.2	1.23 (1.02, 1.48)
7F	4617.3	5880.6	0.79 (0.68, 0.90)
9V	1817.3	2232.9	0.81 (0.70, 0.94)
14	1999.3	2656.7	0.75 (0.64, 0.89)
18C	2757.7	2583.7	1.07 (0.91, 1.26)
19A	3194.3	3979.8	0.80 (0.70, 0.93)
19F	1695.1	1917.8	0.88 (0.76, 1.02)
23F	2045.4	1740.4	1.18 (0.96, 1.44)

PCV15 was Noninferior to PCV13 for the 13 Shared Serotypes

GMT = geometric mean titer; OPA = opsonophagocytic activity; PCV13 = pneumococcal conjugate vaccine, 13-valent; PCV15 = pneumococcal conjugate vaccine, 15-valent

Platt, *et al*. A phase 3 trial of safety, tolerability, and immunogenicity of V114, 15-valent pneumococcal conjugate vaccine, compared with 13-valent pneumococcal conjugate vaccine in adults 50 years of age and older (PNEU-AGE). *Vaccine.* 2022;40(1):162-172..

PCV15 bağışıklık sağlayıcılık (Immunogenicity)



Unique PCV15 Serotypes	PCV15 (n=594–598) GMT	PCV13 (n=586-597) GMT	GMT Ratio (95% CI)
22F	2375.2	74.6	31.83 (25.35, 39.97)
33F	7994.7	1124.9	7.11 (6.07, 8.32)

Proportions of Subjects with a ≥4-Fold Rise in OPA (Day 1 to Day 30)

Unique PCV15 Serotypes	PCV15 Observed response percentage (m/n)	PCV13 Observed response percentage (m/n)	Percentage point difference (PCV15/PCV13) Estimate (95% CI)
22F	71.4 (374/524)	14.3 (71/498)	57.1 (52.0, 61.8)
33F	56.7 (328/578)	6.3 (35/560)	50.5 (45.9, 54.9)

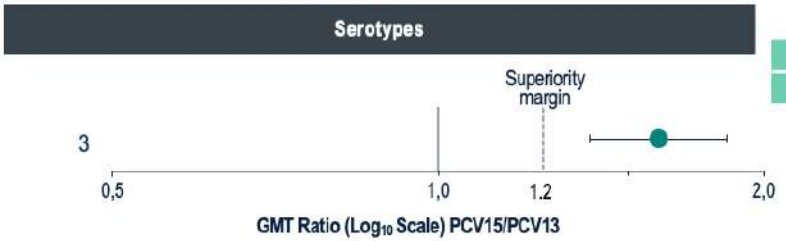
PCV15 was Superior to PCV13 for 2 Unique Serotypes

GMT = geometric mean titer; OPA = opsonophagocytic activity; PCV13 = pneumococcal conjugate vaccine, 13-valent; PCV15 = pneumococcal conjugate vaccine, 15-valent

Platt, *et al*. A phase 3 trial of safety, tolerability, and immunogenicity of V114, 15-valent pneumococcal conjugate vaccine, compared with 13-valent pneumococcal conjugate vaccine in adults 50 years of age and older (PNEU-AGE). *Vaccine.* 2022;40(1):162-172..

PCV15 bağışıklık sağlayıcılık (Immunogenicity)

OPA GMT Ratio (Day 30)



Serotypes	PCV15 (n=598) GMT	PCV13 (n=598) GMT	GMT Ratio (95% CI)
3	216.2	135.1	1.60 (1.38, 1.85)

Proportions of Subjects with a ≥4-Fold Rise in OPA (Day 1 to Day 30)

Serotypes	PCV15 Observed response percentage (m/n)	PCV13 Observed response percentage (m/n)	Percentage point difference (PCV15/PCV13) Estimate (95% CI)
3	70.2 (407/580)	58.7 (338/756)	11.5 (6.0, 16.9)

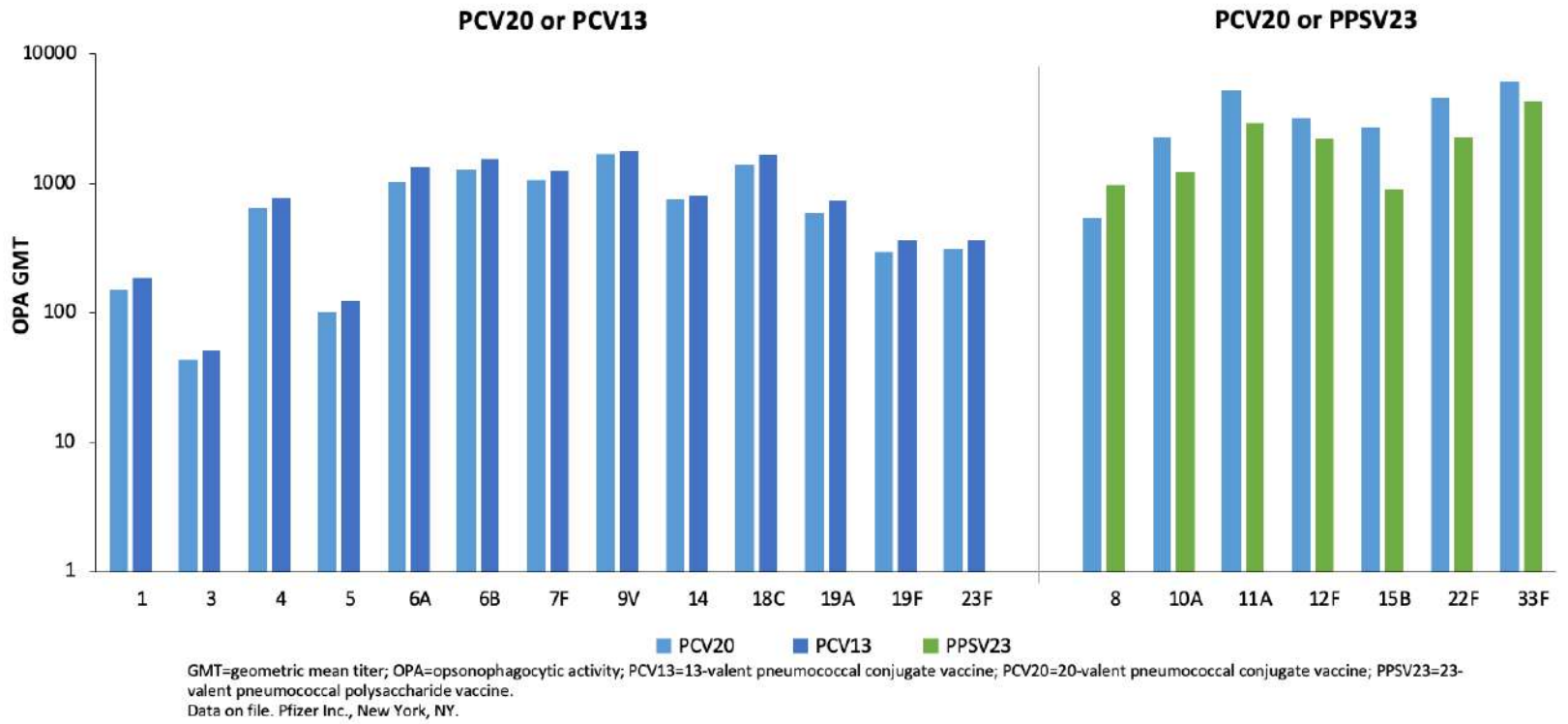
PCV15 OPA GMTs were Statistically Significantly Greater for Serotype 3 Compared to PCV13[a]

[a]As assessed by serotype-specific OPA GMTs (with a 1.2-fold superiority margin) and by serotype-specific proportions of participants with a ≥4-fold rise (with a 0 percentage-point superiority margin) for serotype 3
GMT = geometric mean titer; OPA = opsonophagocytic activity; PCV13 = pneumococcal conjugate vaccine, 13-valent; PCV15 = pneumococcal conjugate vaccine, 15-valent

Platt, *et al*. A phase 3 trial of safety, tolerability, and immunogenicity of V114, 15-valent pneumococcal conjugate vaccine, compared with 13-valent pneumococcal conjugate vaccine in adults 50 years of age and older (PNEU-AGE). *Vaccine.* 2022;40(1):162-172..

PCV20 bağışıklık sağlayıcılık (Immunogenicity)

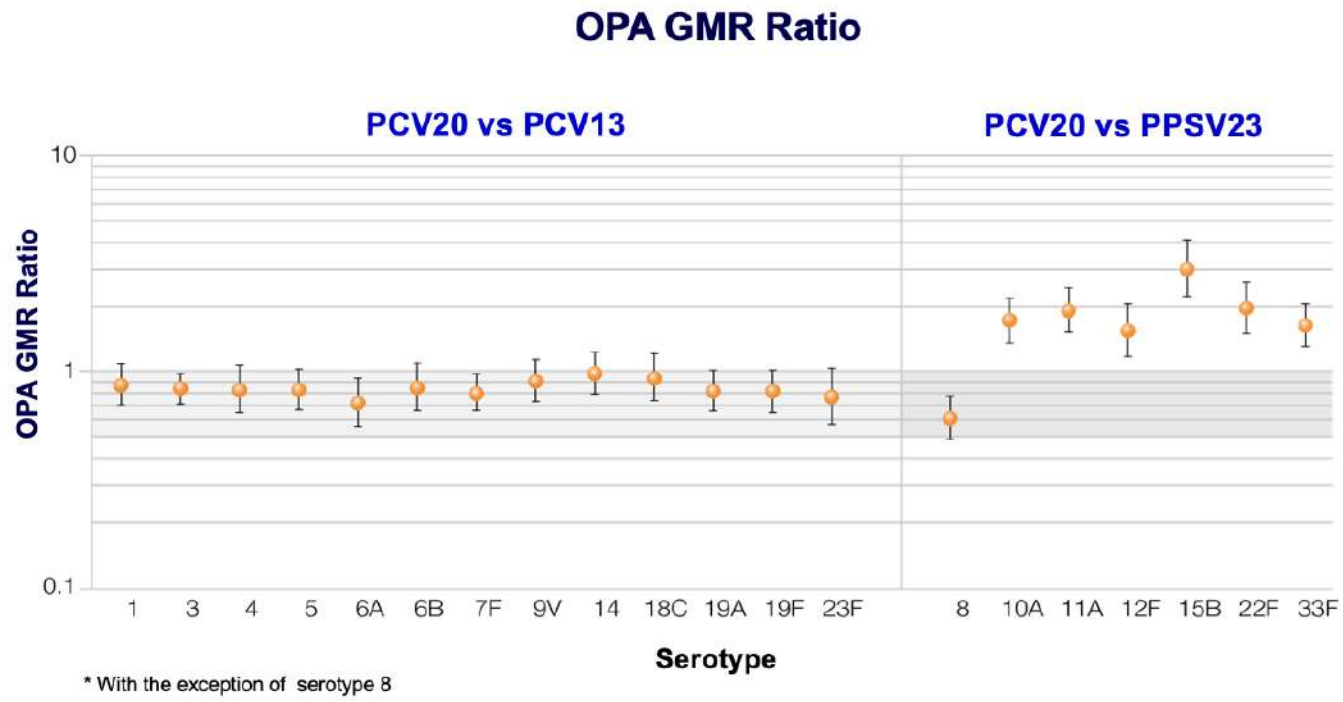
PCV20'nin 20 serotipi için aşılamadan 1 ay sonraki OPA GMT verilerinin, mevcut aşılara benzer olduğu gözlemlenmiştir



Essink B et al. Pivotal Phase 3 Randomized Clinical Trial of the Safety, Tolerability, and Immunogenicity of 20-Valent Pneumococcal Conjugate Vaccine in Adults Aged ≥18 Years. Clin Infect Dis. 2022 Aug 31;75(3):390-398.

PCV20 bağışıklık sağlayıcılık (Immunogenicity)

PCV20, 20 serotipin tümüne karşı güçlü bakterisid immün yanıtı indükledi*
B7471007 Çalışması: OPA GMRs Sonuçları



Essink B et al. Pivotal Phase 3 Randomized Clinical Trial of the Safety, Tolerability, and Immunogenicity of 20-Valent Pneumococcal Conjugate Vaccine in Adults Aged ≥18 Years. Clin Infect Dis. 2022 Aug 31;75(3):390-398.

Neden 20 serotip ?

- KPA-20'deki 7 ek serotip;
  - yüksek hastalık prevelansına sahip,
  - yaygın coğrafik dağılım gösteren,
  - antibiyotik direnci yüksek (serotip 11A, 15B),
  - salgın yapan (serotip 8, 12F) ve
  - ağır hastalık veya yüksek mortalite ile ilişkili (serotip 10A, 11A, 22F) serotipleri içerir.

Thompson, A.; Lamberth, E.; Severs, J.; Scully, I.; Tarabar, S.; Ginis, J.; Jansen, K.U.; Gruber, W.C.; Scott, D.A.; Watson, W. Phase 1 trial of a 20-valent pneumococcal conjugate vaccine in healthy adults. *Vaccine* **2019**, *37*, 6201–6207.

Systematic Review

Pneumococcal Serotype Evolution and Burden in European Adults in the Last Decade: A Systematic Review

Rita Teixeira [1,*], Vasiliki Kossyvaki [2], Paulina Galvez [3] and Cristina Méndez [3]

Microorganisms **2023**, *11*, 1376.

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[3] Vaccines and Antivirals Department, Pfizer Spain, 28108 Madrid, Spain
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Abstract: Pneumococcal disease is a major cause of morbidity/mortality worldwide, and vaccination is an important measure in its prevention. Despite European children being vaccinated with pneumococcal conjugate vaccines (PCVs), pneumococcal infections are still a major cause of morbidity/mortality in adults with risk conditions and their vaccination might be an important prevention strategy. New PCVs have been approved, but information is lacking on their potential impact in European adults. In our review, we searched PubMed, MEDLINE, and Embase for studies on the additional PCV20 serotypes (concerning incidence, prevalence, disease severity, lethality, and antimicrobial resistance) in European adults, between January 2010 and April 2022, having included 118 articles and data from 33 countries. We found that these serotypes have become more prevalent in both invasive and non-invasive pneumococcal disease (IPD and NIPD), representing a significant proportion of cases (serotypes 8, 12F, 22F) and more serious disease and/or lethality (10A, 11A, 15B, 22F), showing antimicrobial resistance (11A, 15B, 33F), and/or affecting more vulnerable individuals such as the elderly, immunocompromised patients, and those with comorbidities (8, 10A, 11A, 15B, 22F). The relevance of pneumococcal adult carriers (11A, 15B, 22F, and 8) was also identified. Altogether, our data showed an increase in the additional PCV20 serotypes' prevalence, accounting for a proportion of approximately 60% of all pneumococcal isolates in IPD in European adults since 2018/2019. Data suggest that adults, as older and/or more vulnerable patients, would benefit from vaccination with higher-coverage PCVs, and that PCV20 may address an unmet medical need.

Keywords: pneumococcal disease; PCV13; PCV15; PCV20; pneumococcal vaccination; public health; systematic review; epidemiology; adults; Europe

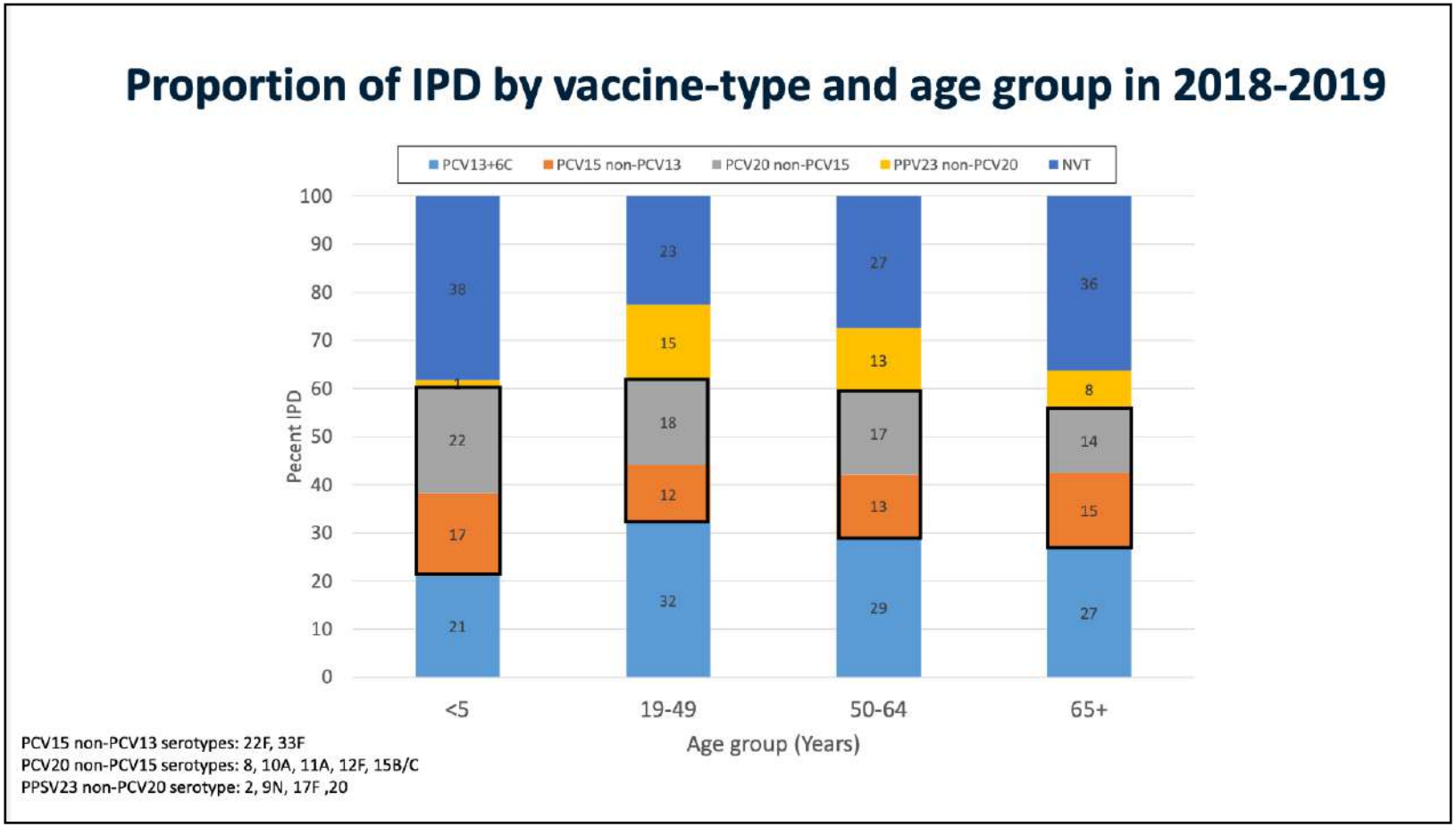
Citation: Teixeira, R.; Kossyvaki, V.; Galvez, P.; Méndez, C. Pneumococcal Serotype Evolution and Burden in European Adults in the Last Decade:

PCV-20 Aşısı gerekli

- Serotip **8, 12F, 22F** en sık IPH ve NIPH
- Serotip **10A, 11A, 15B, 22F** en sık ciddi hastalık ve/veya mortalite
- Serotip **11A, 15A, 33F**
  - Antimikrobiyal direnç
  - Risk faktörü taşıyanlar (yaşlılar, immun yetmezlikler, komorbiditesi olanlar)
- Serotip **11A, 15B, 22F ve 8;** yetişkinlerde en sık taşıyıcılık
- 2018/2019 IPH Avrupa izolatların %60'i PCV20'deki ek serotipler
- Sonuç: yaşlılar ve risk faktörü taşıyanlar PCV20 ile aşılanmalı

Teixeira, R.; Kossyvaki, V.; Galvez, P.; Méndez, C. Pneumococcal Serotype Evolution and Burden in European Adults in the Last Decade: A Systematic Review. *Microorganisms* **2023**, *11*, 1376.

USA- IPH serotip dağılımı



Türkiye Serotip Dağılımı

2015-2018 pasif sürveyans ,

21 merkez, 410 yetişkin hasta

(pnömoni, bakteriyemi, menenjit, peritonit, plevrit)

Serotip Dağılımı

<65 yaş; 19 F(%13), 3 (%11,9), 1 (%9,7), 23F (%6.3)

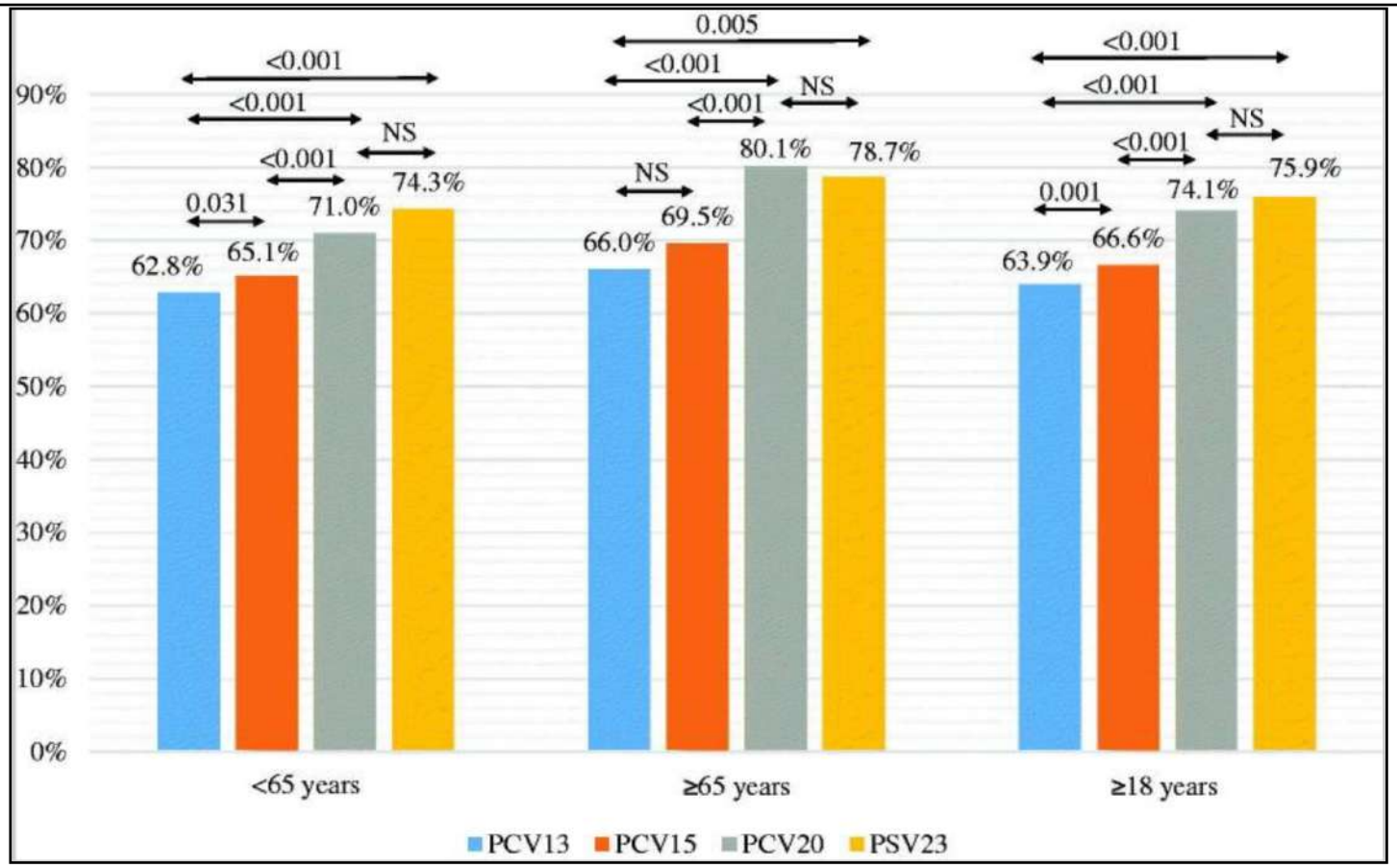
≥65 yaş; 3 (%18,4), 19F (%9,9), 1 (%8,5), 6A (%7,1)

Antibiotic non-susceptibility according to age groups.

	Age groups		
	<65 years n (%)	≥65 years n (%)	Total n (%)
Penicillin (non-meningitis)	10 (4.1)	6 (4.8)	16 (4.3)
Penicillin (meningitis)	17 (70.8)	8 (57.1)	25 (65.8)
Penicillin (oral penicillin V)	149 (55.4)	75 (53.2)	224 (54.6)
Cefotaxime (meningitis)	6 (25.0)	2 (14.3)	8 (21.1)
Cefotaxime (non-meningitis)	9 (3.7)	7 (5.5)	16 (4.3)
Erythromycin	103 (38.3)	54 (38.3)	157 (38.2)
Moxifloxacin	2 (0.8)	3 (2.1)	5 (1.2)

Gulsen Hascelik, at al. Serotype distribution of Streptococcus pneumoniae and pneumococcal vaccine coverage in adults in Turkey between 2015 and 2018. Ann Med. 2023; 55(1): 266–275.

Türkiye Serotip Dağılımı- Aşı kapsayıcılığı



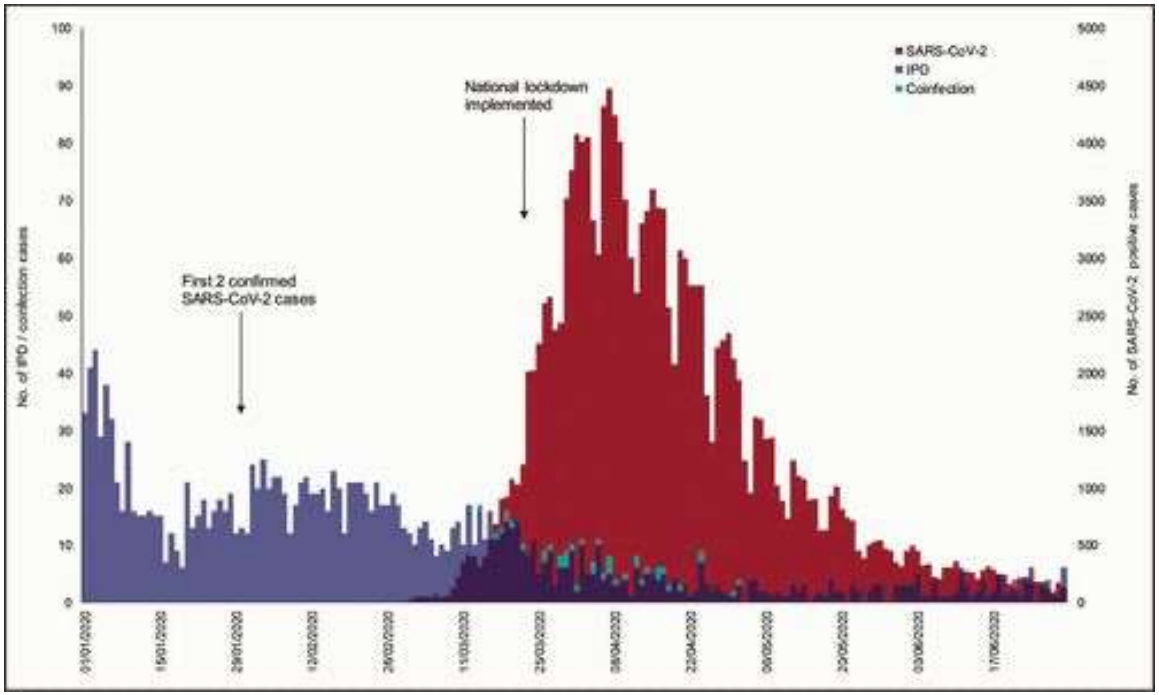
Gulsen Hascelik, at al. Serotype distribution of Streptococcus pneumoniae and pneumococcal vaccine coverage in adults in Turkey between 2015 and 2018. Ann Med. 2023; 55(1): 266–275.

Pnömokokal Hastalık ve COVID-19

- COVID19 önlemleri kapsamında diğer solunum yolu hastalıklarında azalma görülmüştür
- 144 pediatrik hasta (6-36 ay) pandeminin ilk 9 ayında
  - Solunum yolu enfeksiyonlarında ve nazofaringeal kolonizasyonda azalma
  - Pre pandemic doneme göre sağlıklı çocuklarda
    - *H. influenzae* ve *M. catarrhalis* nazofarengeal taşıyıcılık azalma
    - *S. pneumoniae* sıklığında değişiklik yok
  - AOM tanısı konulan çocuklarda prepandemik döneme göre
    - her 3 bakteri için nazofaringela kolonozasyin sıklığında fark yok

Kaur R, Schulz S, Fuji N, Pichichero M. COVID-19 pandemic impact on respiratory infectious diseases in primary care practice in children. *Front Pediatr.* 2021;9:722483

Number of Cases of IPD, SARS-CoV-2, and Coinfections During the First Peak (February Through June 2020) of the COVID-19 Pandemic in England



Şubat-haziran 2020

- 40 IPH/COVID10 ko-enfeksiyon mortalite %62,5
- 21 IPH 3-27 gün sonra COVID19 mortalite %47,6
- 27 IPH ≥28 gün COVID19 mortalite %33.3
- (p<.001)

- IPH göre – vaka/ölüm hızı
  - Ko-enfeksiyon 7,8 kat
  - Superenefeksiyon (3-27 gun sonra) 3,8 kat yüksek

Amin-Chowdhury Z. Impact of the coronavirus disease 2019 (COVID-19) pandemic on invasive pneumococcal disease and risk of *pneumococcal coinfection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Prospective national cohort study, England. Clin Infect Dis. 2021*

Pnömokokal Hastalık ve COVID-19

- COVID19-Bakteriyel ko-enfeksiyon
  - %3,5 Toplum kaynaklı bakteriyel enfeksiyon
  - %28 YBU yatan hastalarda (Solunumsal bakteri-multipleks panel)
    - *S. aureus (%31), H.influenzae (%22),* ***S. pneumoniae* (%19)**, Enterobacteriaceae (%16), *P.aeruginosa* (%6), *M. catarrhalis* (%3), *A. baumannii* (%3)
      - *Contou D. Bacterial and viral co-infections in patients with severe SARS-CoV-2 pneumonia admitted to a French ICU. Ann Intensive Care. 2020*

Pnömokokal Hastalık ve COVID-19

- İlk 28 gün; IPH karşılaştırıldığında
  - IPH / COVID19 ko-enfeksiyon 7 kat
  - COVID19 sonrası IPH gelişmesi 4 kat MORTALITE ODDS
    - Leigh M Howard. Is There an Association Between Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and *Streptococcus pneumoniae? Clin Infect Dis. 2021*

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 72 / No. 3
September 8, 2023

Pneumococcal Vaccine for Adults Aged ≥19 Years: Recommendations of the Advisory Committee on Immunization Practices, United States, 2023

TABLE 7. Recommendations for use of PCV15 or PCV20 in pneumococcal conjugate vaccine–naïve adults aged ≥19 years — Advisory Committee on Immunization Practices, United States, 2023

Medical indication group	Specific underlying medical condition	Age group, yrs	
		19–64	≥65
None	None	None	1 dose of PCV20 alone, or 1 dose of PCV15 followed by a dose of PPSV23 ≥1 year later*
Underlying medical conditions or other risk factors	Alcoholism Chronic heart disease† Chronic liver disease Chronic lung disease§ Chronic renal failure¶ Cigarette smoking Cochlear implant Congenital or acquired asplenia¶ Congenital or acquired immunodeficiencies¶,** CSF leak Diabetes mellitus Generalized malignancy¶ HIV infection Hodgkin disease¶ Iatrogenic immunosuppression¶,†† Leukemia¶ Lymphoma¶ Multiple myeloma¶ Nephrotic syndrome¶ Sickle cell disease or other hemoglobinopathies¶ Solid organ transplant¶	1 dose of PCV20 alone or 1 dose of PCV15 followed by a dose of PPSV23 ≥1 year later*	1 dose of PCV20 alone or 1 dose of PCV15 followed by a dose of PPSV23 ≥1 year later*

Adults with immunocompromising conditions, a CSF leak, or a cochlear implant might benefit from shorter intervals (e.g., ≥8 weeks).

These vaccine doses do not need to be repeated at age ≥65 years if administered at age

19-64 yaş
Kronik hastalık, Risk Faktörü, immun yetmezlik

Daha önce aşılanmamış

KPA20

veya

KPA15 → PPA23

≥ 1 yıl (Kronik hastalık)

≥ 8 hft.

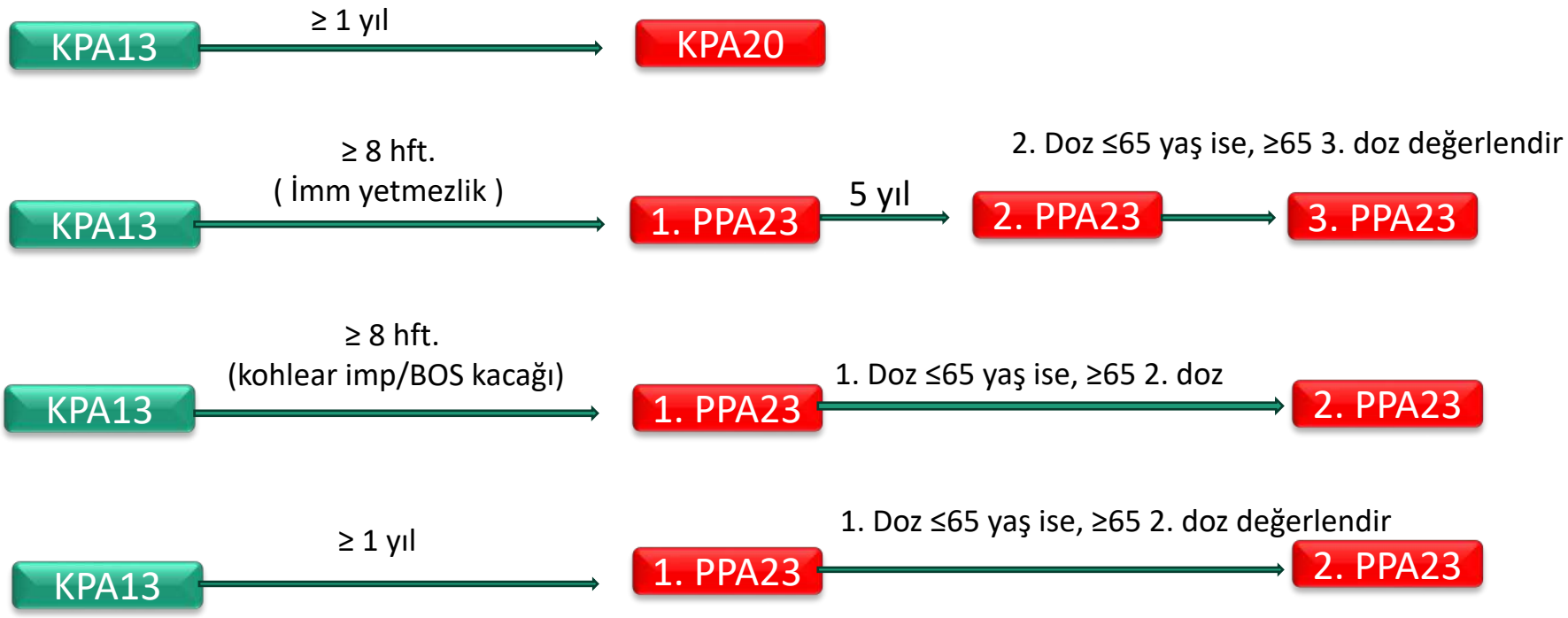
(İmm yetmezlik + kohlear implant/BOS kacağı)

Daha önce PPA23

PPA23 → ≥ 1 yıl → KPA20 / veya / KPA15

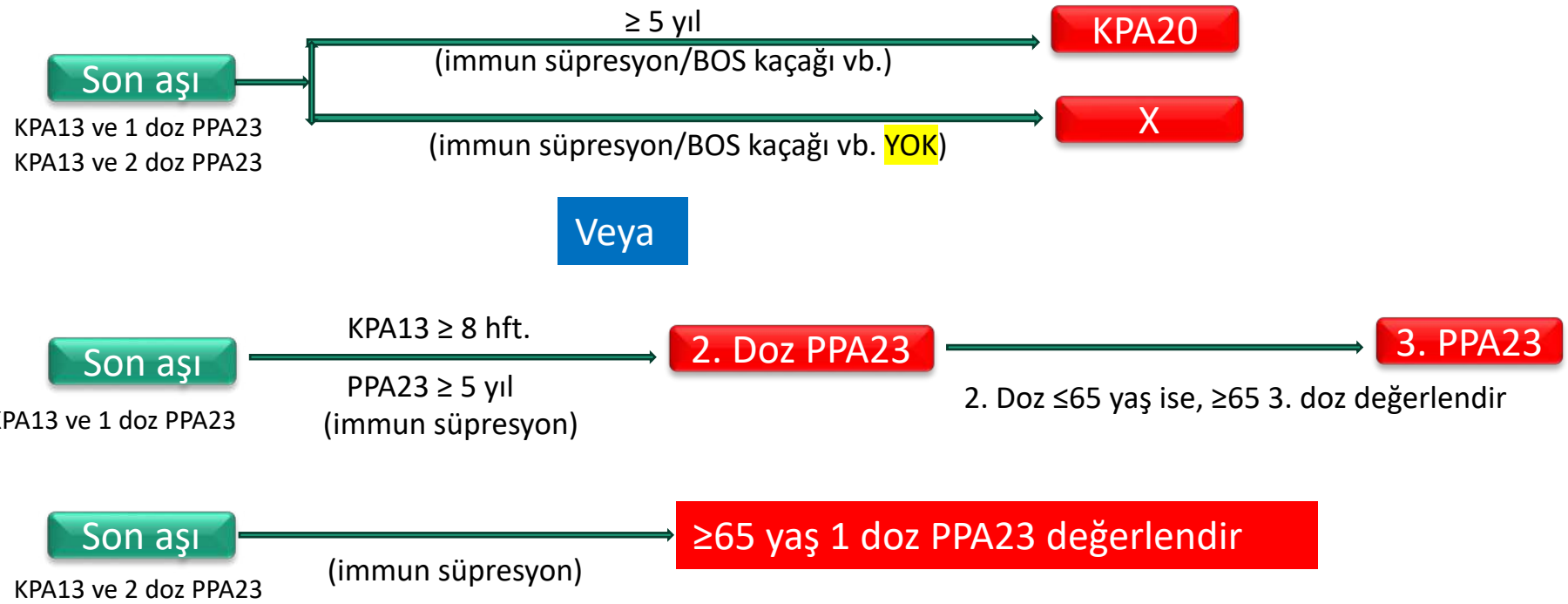
19-64 yaş
Kronik hastalık, Risk Faktörü, immun yetmezlik

Daha önce KPA13



19-64 yaş
Kronik hastalık, Risk Faktörü, immun yetmezlik

Daha önce KPA13 ve PPA23
(kronik hastalık için aşı şeması tamamlanmış varsayılır)



>65 yaş +/-

(Kronik hastalık, Risk Faktörü, immun yetmezlik)

Daha önce aşılanmamış

KPA15 → (≥ 1 yıl; ≥ 8 hft. İmm yetmezlik + kohlear implant/BOS kacağı) → PPA23

veya

KPA20 → X

Daha önce PPA23

PPA23 → (≥ 1 yıl) → KPA15 veya KPA20

>65 yaş +/-
(Kronik hastalık, Risk Faktörü, immun yetmezlik)

Daha önce KPA13

KPA13 → (≥ 1 yıl) → KPA20

veya

KPA13 → (≥ 8 hft. (İmm yetmezlik, kohlear imp/BOS kacağı)) → 1. PPA23

KPA13 → (≥ 1 yıl) → 1. PPA23

(immun süpresyon. kohlear imp/BOS kacağı YOK)

>65 yaş +/-
(Kronik hastalık, Risk Faktörü, immun yetmezlik)

Daha önce KPA13 ve PPA23

Son aşı
KPA13 ve PPA23
PPA23 65 yaşından önce

≥ 5 yıl → KPA20
KPA13 ve PPA23
PPA23 65 yaşından sonra ise opsiyonel

Veya

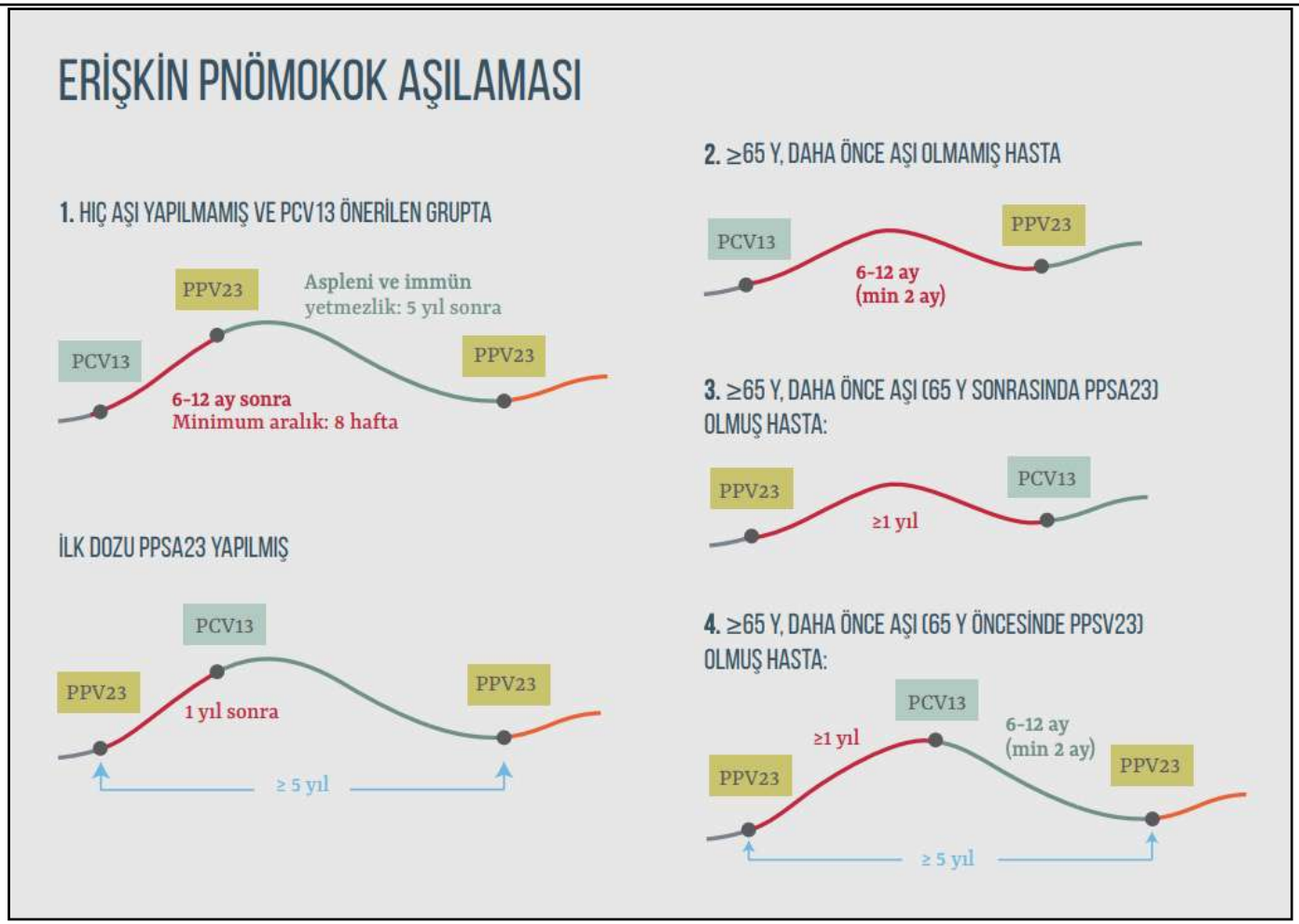
Son aşı
KPA13 ve PPA23
PPA23 65 yaşından önce

KPA13 ≥ 8 hft. → 2. Doz PPA23
PPA23 ≥ 5 yıl
(immun süpresyon var)

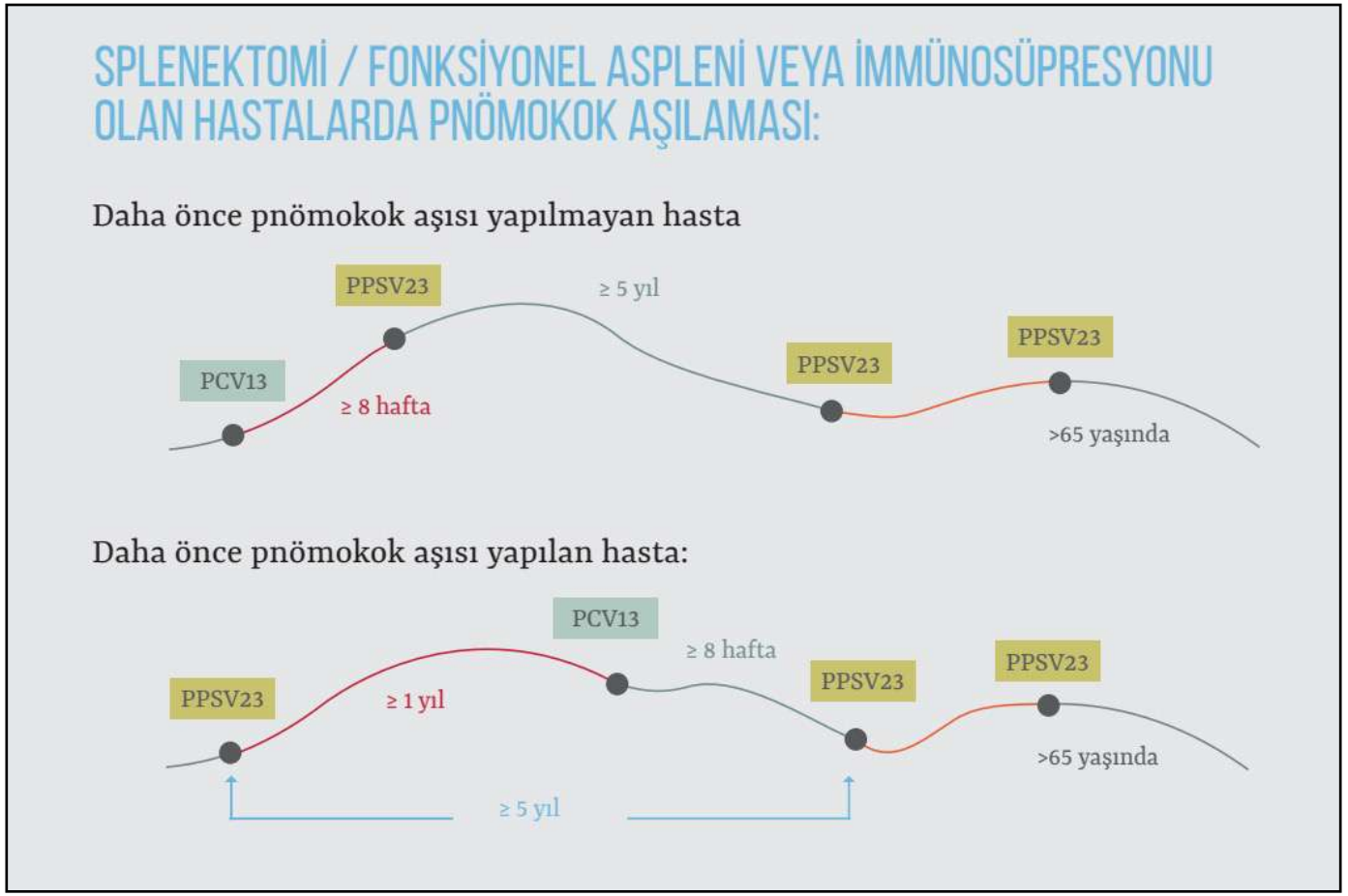
Son aşı
KPA13 ve PPA23
PPA23 65 yaşından önce

KPA13 ≥ 1 yıl/PPA23 ≥ 5 yıl → 2. Doz PPA23
(immun süpresyon yok)

KLİMİK önerileri



KLİMİK önerileri



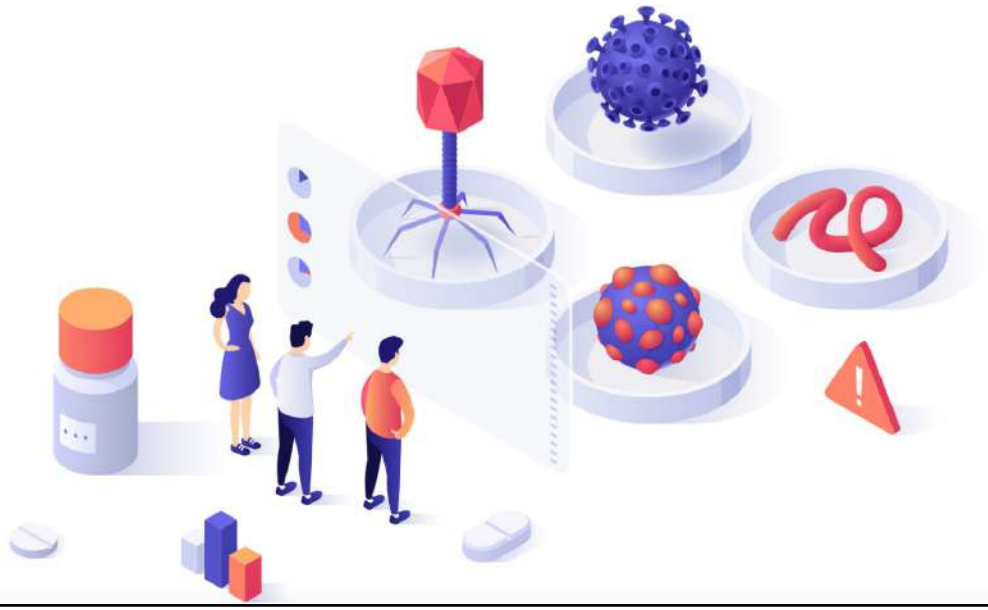
Klimik önerileri

klimik aşı platformu

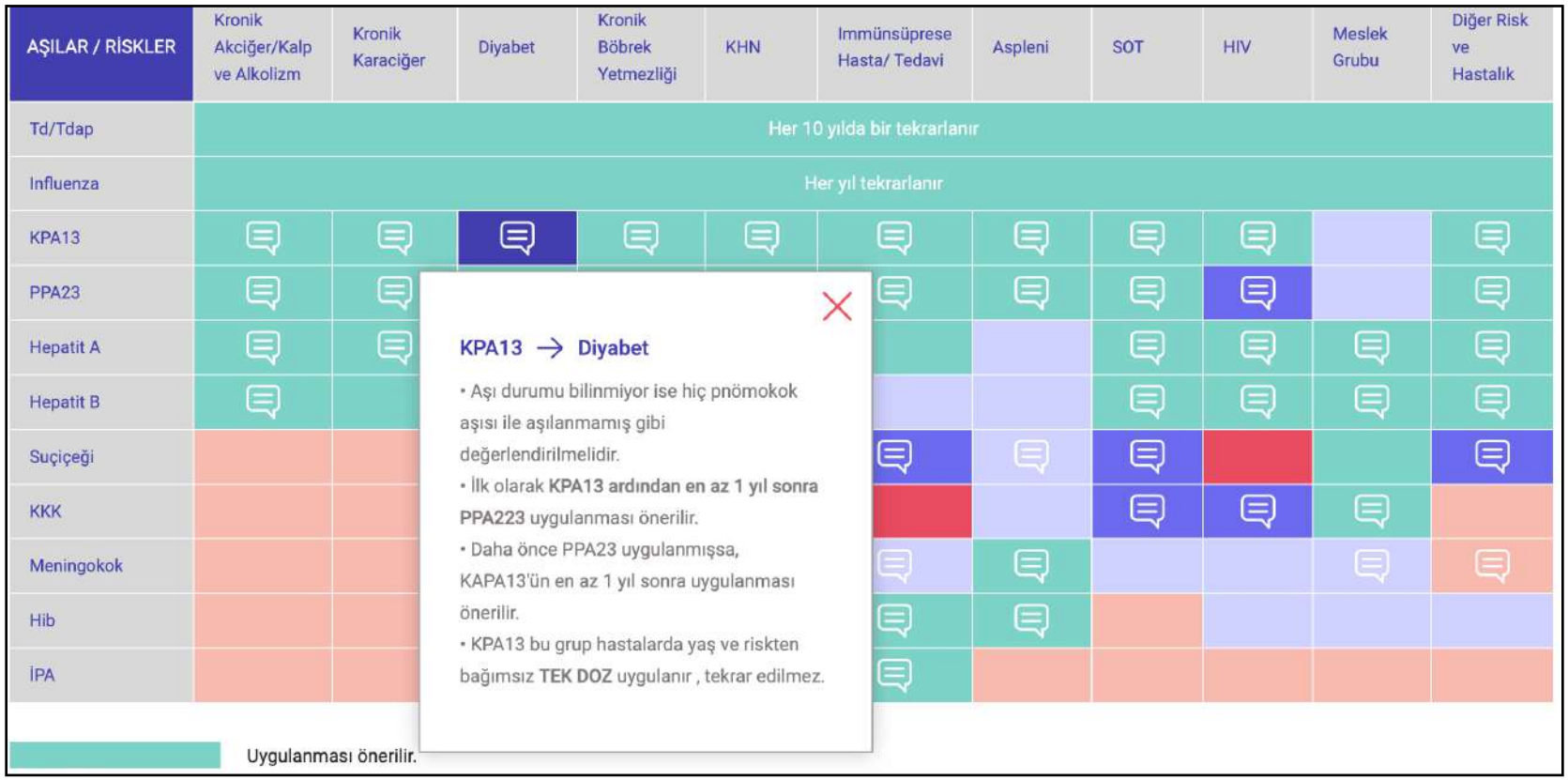
Aşılar Risk Grupları Aşı Uygulamaları Sık Sorulan Sorular Kütüphane Blog

Klimik Derneği Aşı Platformu

Erişkin Bağışıklaması Çalışma Grubu tarafından hazırlanmıştır.



Erişkin Aşı Takvimi



Eriskin Aşılaması

Pozoloji Matik