

Meningokok Aşısı

Kime, Ne zaman Yapılmalı?



Prof. Dr. Zafer Kurugöl



59. Türkiye Milli Pediatri Kongresi
4-8 Kasım 2015, Antalya

İnvaziv meningokok hastalığı (IMH)

- Hızlı progresyon gösteren

1.200.000 vaka
135.000 ölüm

- Erken mor

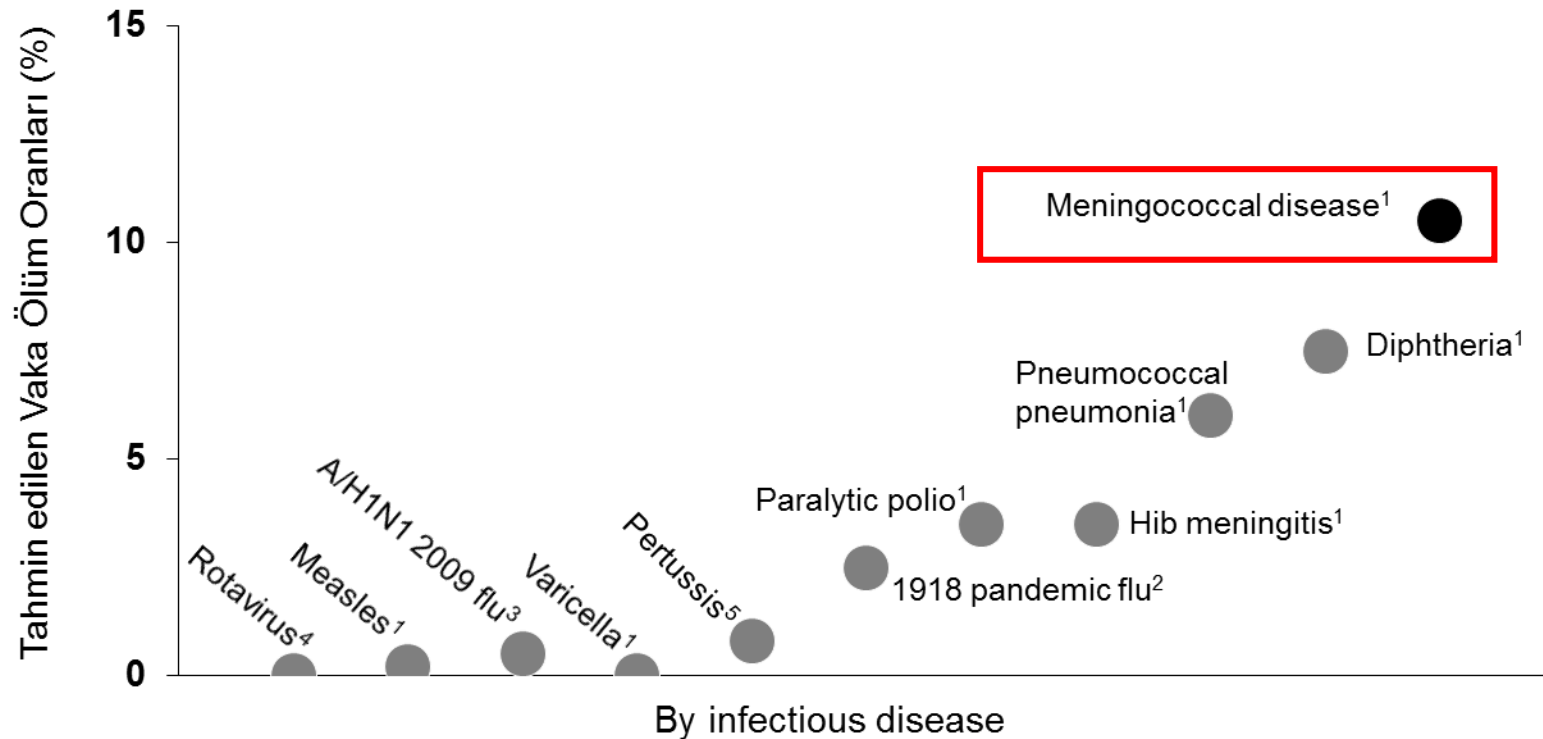
• Meningokokal menenjitte
fatalite oranı %10-20,

Türkiye'de
%18.44

- En y
enf

• meningokoksemi vakalarında %40

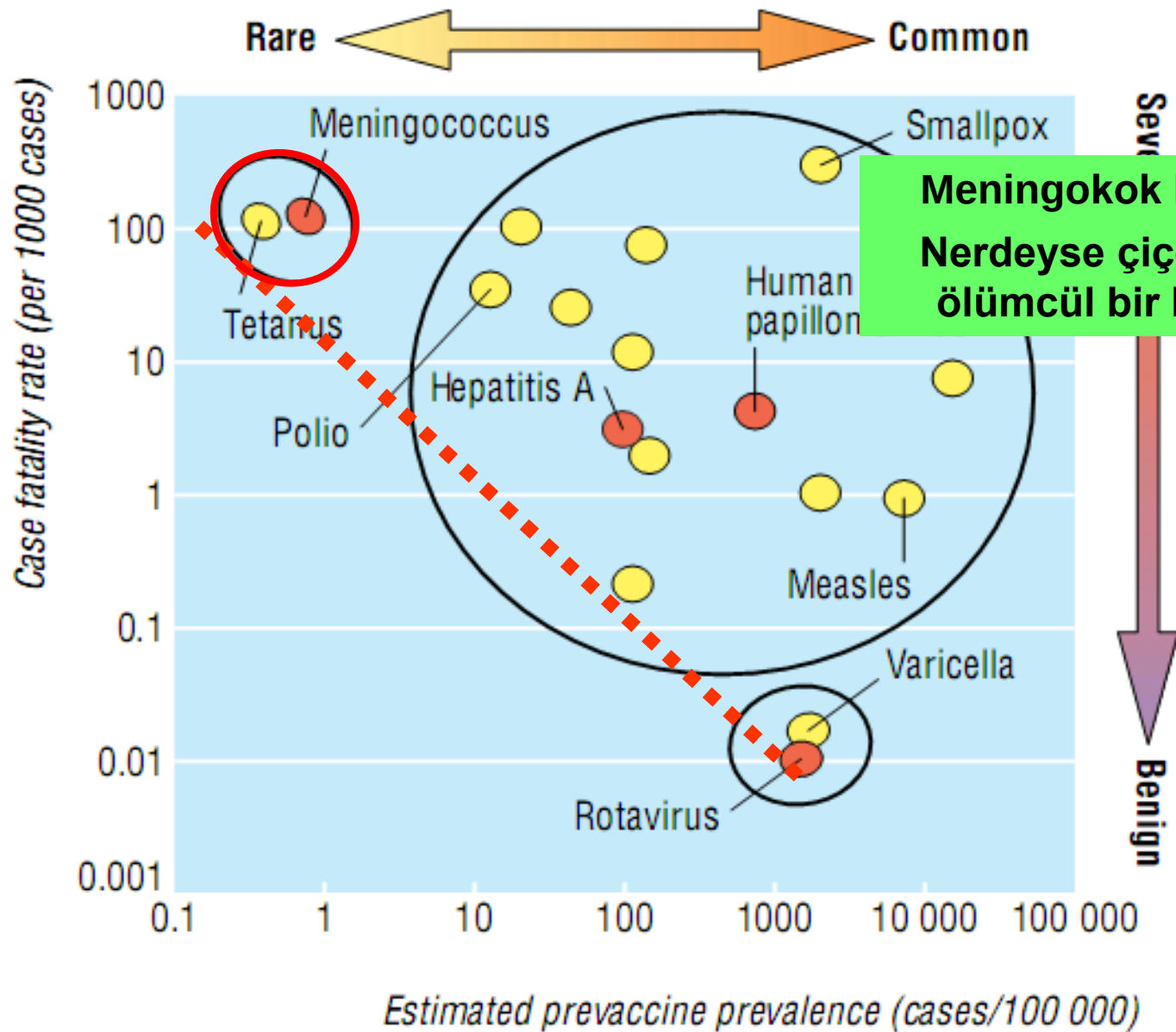
Vaka/Ölüm Oranları



Notes: Meningococcal disease and Hib meningitis: despite appropriate antimicrobial therapy; paralytic polio: in children; 1918 pandemic flu: in young adults; varicella: in children and adolescents; A/H1N1 2009 flu: worldwide; measles: US, 1985–1992; rotavirus: US general population; pertussis: infants <6 months of age, US, 2001–2003.

Hib=Haemophilus influenzae type b.

1. Centers for Disease Control and Prevention (CDC). *Epidemiology and Prevention of Vaccine-Preventable Diseases*. 12th ed. Atkinson W, et al, eds. Washington, DC: Public Health Foundation; 2012. <http://www.cdc.gov/vaccines/pubs/pinkbook/index.html#chapters>; 2. Taubenberger JK, et al. *Emerg Infect Dis*. 2006;12:15-22; 3. Pandemic H1N1 2009 Overview. CIDRAP website. http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/biofacts/h1n1_panview.html; 4. Gerba CP, et al. *Wat Res*. 1996;30:2929-2940; 5. Centers for Disease Control and Prevention (CDC). *MMWR Morb Mortal Wkly Rep*. 2005;54:1283-1286.



SEKELLER

Long-term sequelae (any) %10-20

Hearing impairment

Hearing loss (any) 8 (7%)

Severe hearing loss 4 (3.5%)

Hearing aid 2 (1.7%)

Cochlear implant 1 (0.9%)

Neurologic, behavioral, developmental and motor impairment

Learning-academic difficulties (any) 26 (22.6%)

Behavioral and emotional problems 17 (14.8%)

Chronic headaches 16 (14%)

Neurologic impairment 14 (12.2%)

Speech-language impairment 4 (12.2%)

Motor disability 2 (10.4%)

Gait disturbance 0 (8.7%)

Severe motor impairment 4 (3.5%)

Amputation 2 (1.7%)

Seizures 2 (1.7%)

Meningitis victims' mothers urge vaccine for college students

By LAURAN NEERGAARD
Associated Press

WASHINGTON — It started like a mere stomach bug: John Kach felt fine one day but spent the next throwing up. By day's end the 19-year-old college freshman was in a coma — and spent almost four months in the hospital, surviving only after doctors amputated one foot and all his fingers and toes.

Patrick Kepferle wasn't so lucky. The freshman at Towson University in Maryland died less than 24 hours after the first symptoms.

This is bacterial meningitis. While rare, it can sicken and kill with terrifying swiftness. And college freshmen who live in dormitories are prime targets.

Now some states have begun mandating that most students who live on campus get vaccinated against meningococcal meningitis — and a group of mothers is making public their



John Kach, 21, sits with his mother, Paige, outside their Carmel, N.Y., home. Two years ago, as a college freshman, John Kach caught bacterial meningitis, a fairly rare but grave disease.

Associated Press

SEKELLER

Long-term sequelae (any) 38 (33%)

Hearing impairment

Hearing loss (any) 8 (7%)

Severe hearing loss 4 (3.5%)

Hearing aid 2 (1.7%)

Cochlear implant 1 (0.9%)

Neurologic, behavioral, developmental and motor impairment

Learning-academic difficulties (any) 26 (22.6%)

Behavioral and emotional problems 17 (14.8%)

Chronic headaches 16 (14%)

Neurologic impairment 14 (12.2%)

Speech-language impairment 4 (12.2%)

Motor disability 2 (10.4%)

Gait disturbance 0 (8.7%)

Severe motor impairment 4 (3.5%)

Amputation 2 (1.7%)

Seizures 2 (1.7%)

Meningitis victims' mothers urge vaccine for college students

By LAURAN NEERGAARD
Associated Press

WASHINGTON — It started like a mere stomach bug: John Kach felt fine one day but spent the next throwing up. By day's end the 19-year-old college freshman was in a coma — and spent almost four months in the hospital, surviving only after doctors amputated one foot and all his fingers and toes.

Patrick Kepferle wasn't so lucky. The freshman at Towson University in Maryland died less than 24 hours after the first symptoms.

This is bacterial meningitis. While rare, it can sicken and kill with terrifying swiftness. And college freshmen who live in dormitories are prime targets.

Now some states have begun mandating that most students who live on campus get vaccinated against meningococcal meningitis — and a group of mothers is making public their



John Kach, 21, sits with his mother, Paige, outside their Carmel, N.Y., home. Two years ago, as a college freshman, John Kach caught bacterial meningitis, a fairly rare but grave disease.

Associated Press

İnvaziv meningokok hastalığı

- **Önemli hastalık yüküne sahiptir, (morbidite, mortalite, sekeller)**
- **İnvaziv meningokok hastalığı herkesi, her yerde, her zaman tutabilir, vakaların çoğu önceden sağlıklı kişilerdir.**

İMH - risk faktörleri

Lack of
bacteri
antibo

- Infants
- Other a
groups

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

An underlying condition was present in only 9 (5.6%) patients (complement deficiency detected as a result of the meningococcal infection [2], sickle cell dis-

Vakaların sadece %3'ü risk grubunda

Sheld
B. Ha

patient (19 years of age) received the meningococcal polysaccharide vaccine 1.5 years before onset of this infection (serogroup B). Three secondary cases of meningococcal disease were identified in the daughter of a baby-sitter, a household contact, and a patient in close proximity in the ICU.

sha
llen



Sheldon L, et al. Pediatrics 2006; 118: e979.

Previous pathology in cases of invasive meningococcal disease in children under 5 years old

Raquel Abad ^a, Rosa Cano ^b, Israel John Thuissard ^c, Julio A. Vázquez ^{a,d}, , 

- **İspanya**
- **5 yaşından küçük 1255 IMH vakası**
 - **1209 hastada (%96.5) altta yatan hastalık bulunmadığı,**
 - **Sadece 46 (%3.5) hastada altta yatan hastalık saptanmış.**

Previous pathology in cases of invasive meningococcal disease in children under 5 years old

Raquel Abad ^a, Rosa Cano ^b, Israel John Thuissard ^c, Julio A. Vázquez ^{a,d},  

- 46 hastada altta yatan hastalık saptanmış.

- Hematolojik malignitesi hasta : 0

**SADECE RİSK GRUBUNUN
AŞILANMASI DURUMUNDA
1255 VAKANIN YALNIZCA
BİRİNDE KORUNMA
SAĞLANACAKTIR.**

- SSS patolojileri, kafa fraktörü: 3 hasta
- Minör konjenital anomaliler: 34 hasta

IMH - Bildiklerimiz

- **İnvaziv meningokok hastalığı epidemiyolojisi (insidansı, yaş dağılımı, serogrup dağılımı) ülkeden ülkeye değiştiği gibi zaman içinde de önemli değişiklikler gösterir.**

Granoff DM, Gilsdorf JR. *Neisseria meningitidis* (Meningococcus). Nelson Textbook of Pediatrics, 2011; 929-935; Krugman's Infectious Diseases of Children, 2003; Dinleyici EC, Ceyhan M. Expert Rev Vaccines 2012; 11(5): 515-8.

IMH - serogrup dağılımı

Neisseria meningitidis

A, B, C, W, X, Y

Hangi aşı



AŞI	TAŞIYICI PRÖTEİN	SEROGROUPS	DİĞER ANTİJENLER	
Nimenrix™	TT	A, C, W-135, Y	–	
Menveo™	CRM ₁₉₇	A, C, W-135, Y	–	Novartis
Menactra™	DT	A, C, W-135, Y	–	sanofi pasteur
Neisvac-C™	TT	C	–	Baxter
Meningitec™	CRM ₁₉₇	C	–	Nuron
Menjugate™	CRM ₁₉₇	C	–	
Menitorix™	TT	C	<i>Haemophilus type b</i>	 GlaxoSmithKline Biologicals
Menhibrix™	TT	C,Y	<i>Haemophilus type b</i>	 GlaxoSmithKline Biologicals
MenAfriVac™	TT	A	–	Meningitis Vaccine Project
Bexsero™	–	B	–	 GlaxoSmithKline Biologicals
Trumenba®	–	B	–	
Mencevax™	–	A, C, W-135, Y	–	
Menomune™	–	A, C, W-135, Y	–	sanofi pasteur

IMH - serogrup dağılımı

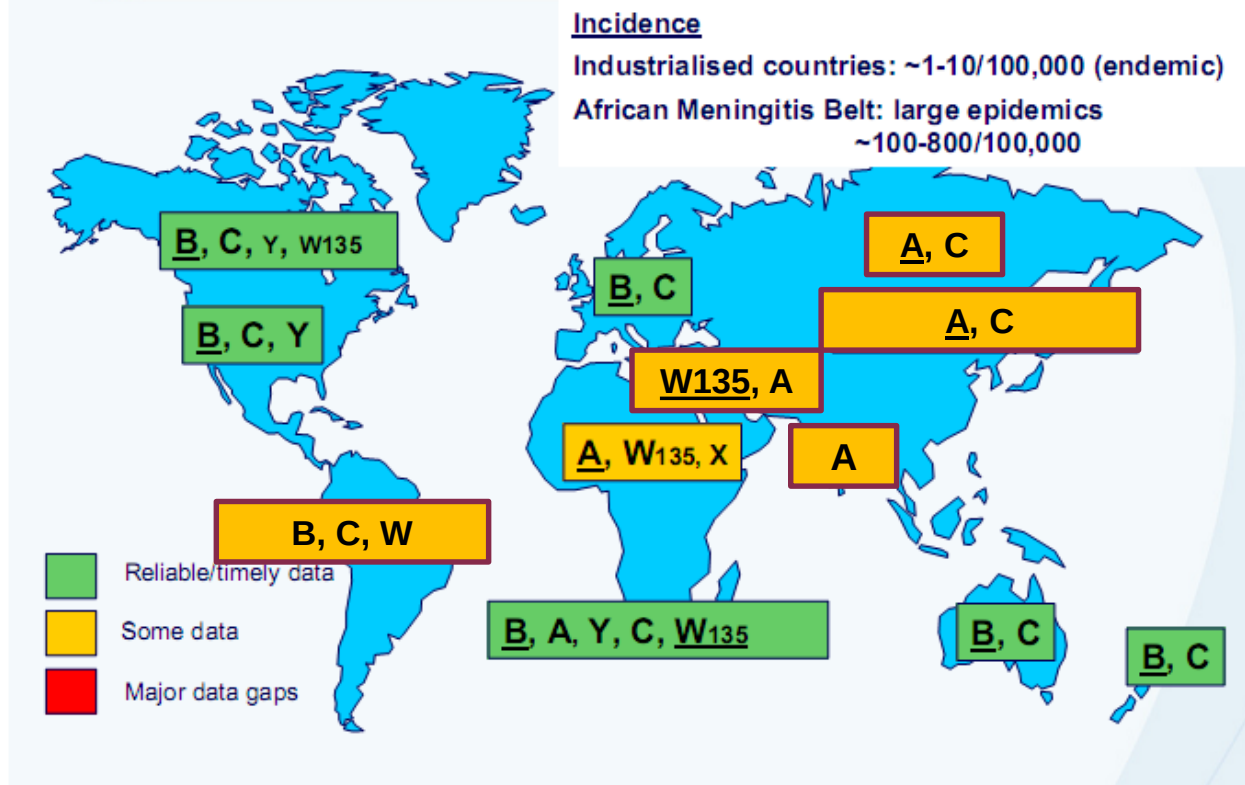
- Neisseria meningitidis

- A, B, C, W, X, Y

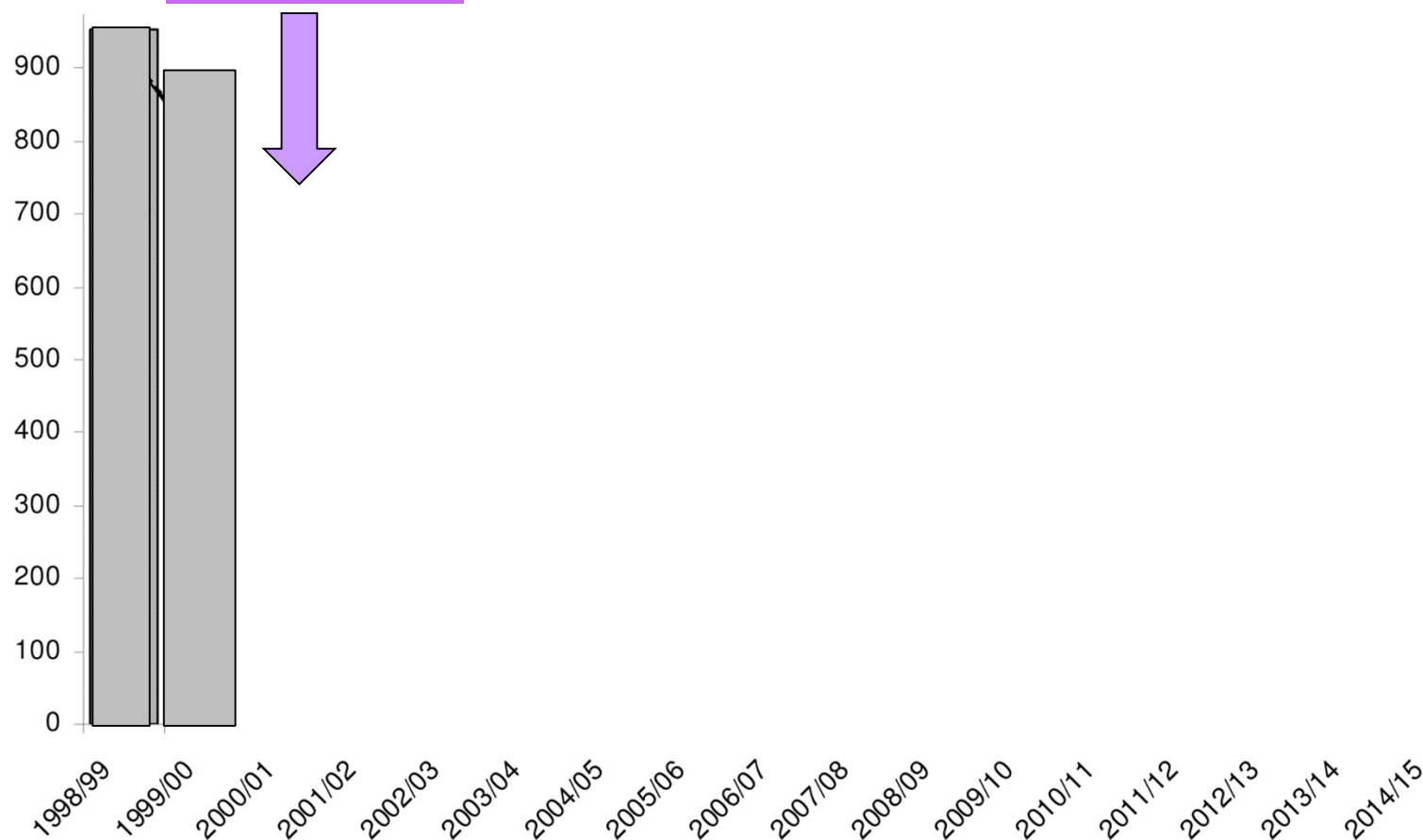
Hangi aşı



İnvazif meningokok hastalığı serogrup dağılımı



Incidence of invasive pneumococcal C disease in England and Wales by epidemiological year between 1998-1999 and 2008-2009.

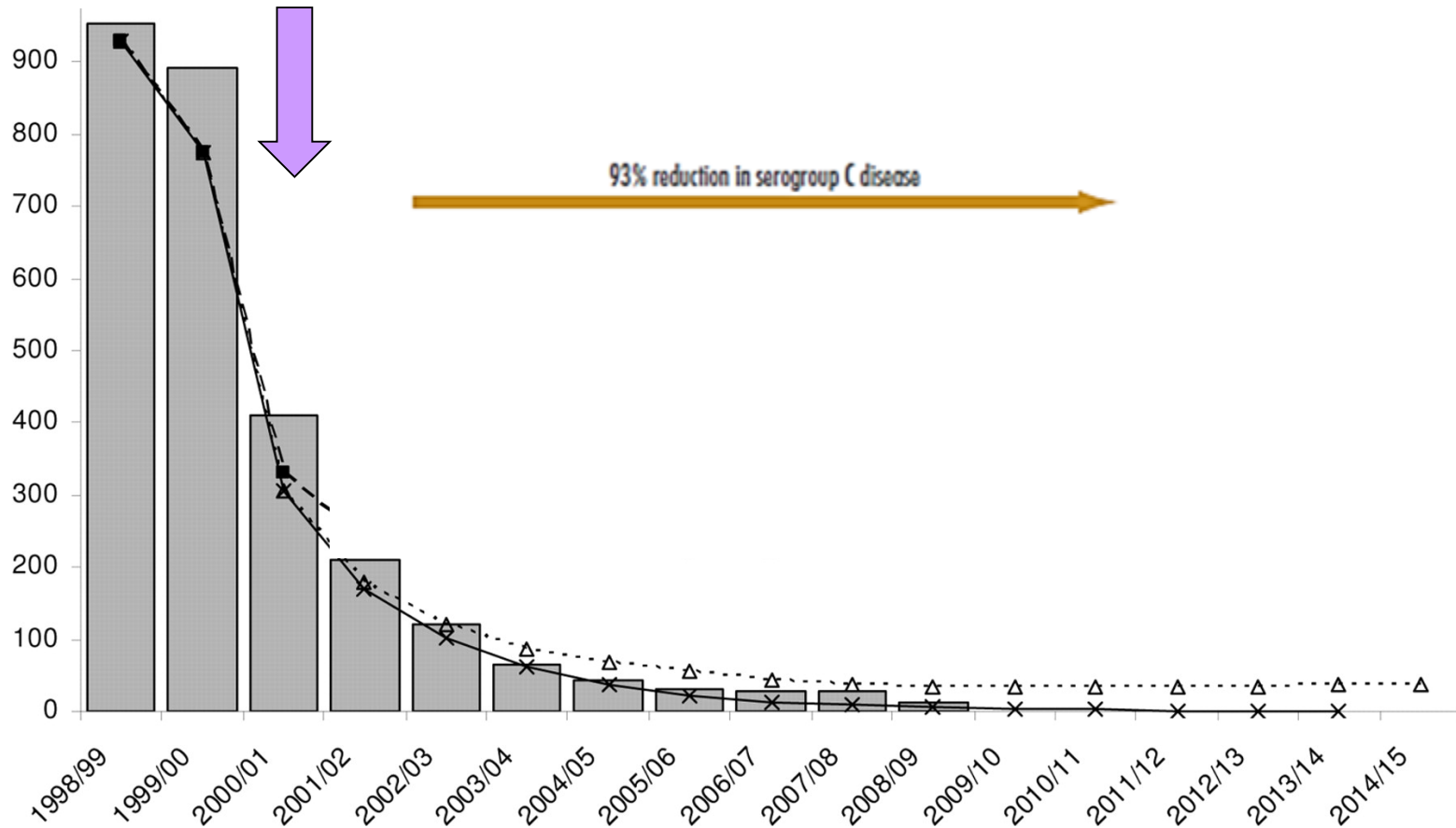


Campbell H et al. Clin Vaccine Immunol 2010;17:840-847

Clinical and Vaccine Immunology

Incidence of invasive pneumococcal C disease in England and Wales by epidemiological year between 1998-1999 and 2008-2009.

Men C aşı

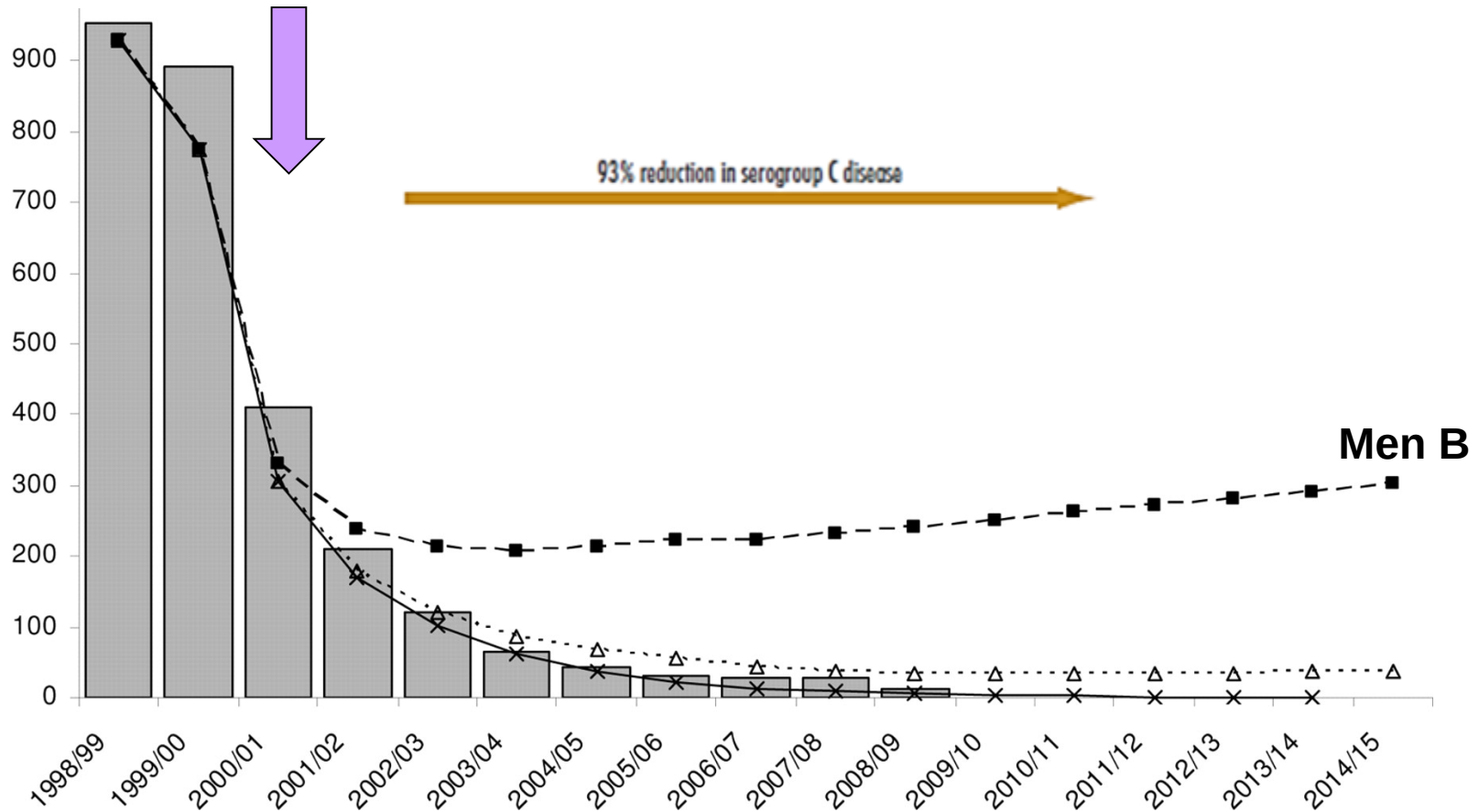


Campbell H et al. Clin Vaccine Immunol 2010;17:840-847

Clinical and Vaccine Immunology

Incidence of invasive pneumococcal C disease in England and Wales by epidemiological year between 1998-1999 and 2008-2009.

Men C aşı

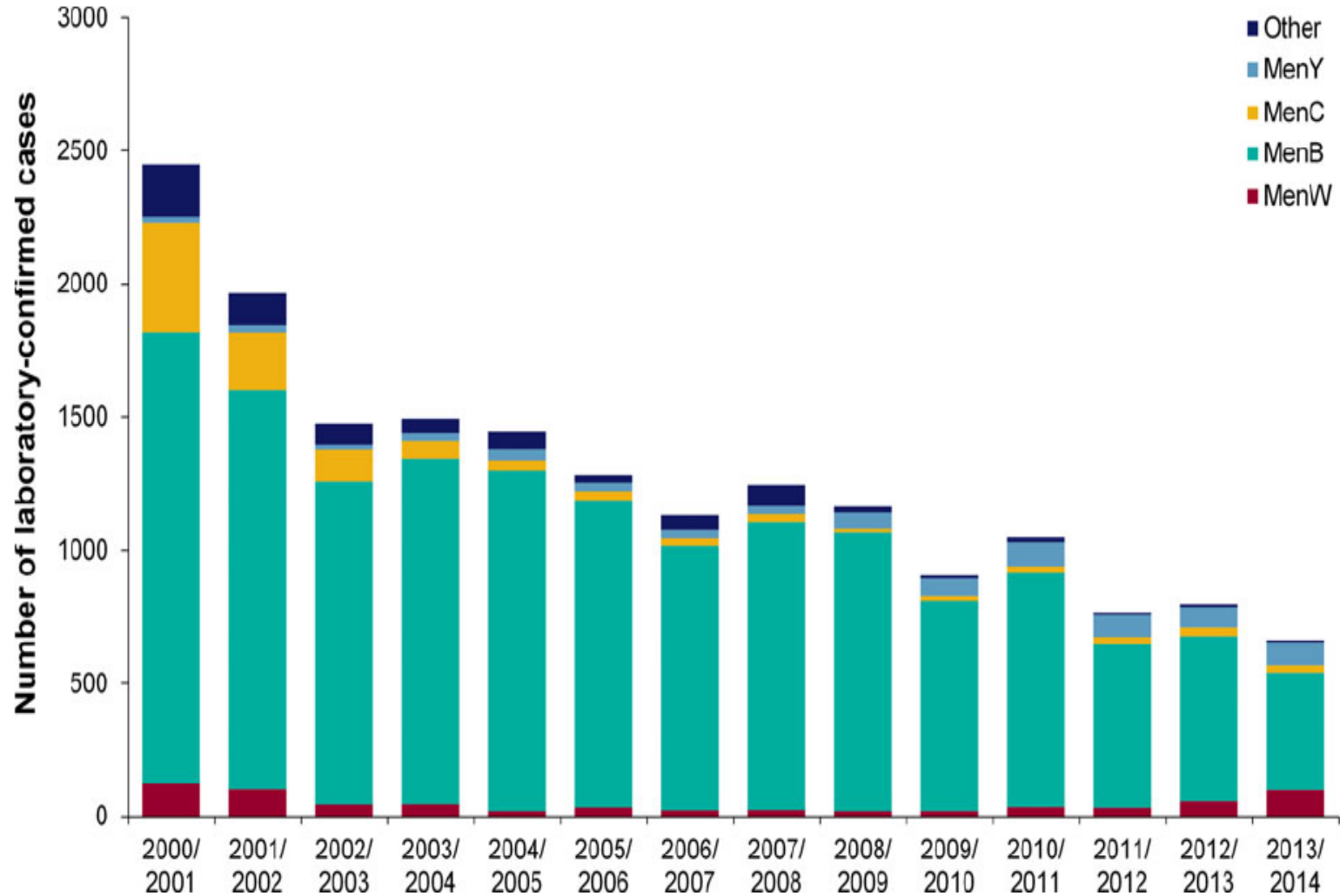


Campbell H et al. Clin Vaccine Immunol 2010;17:840-847

Clinical and Vaccine Immunology

İNGİLTERE

IMH serogrup dağılımı

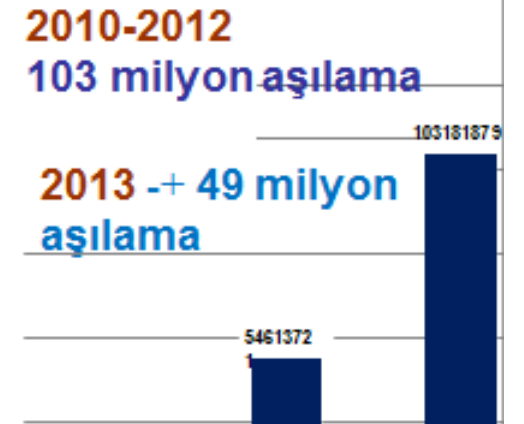
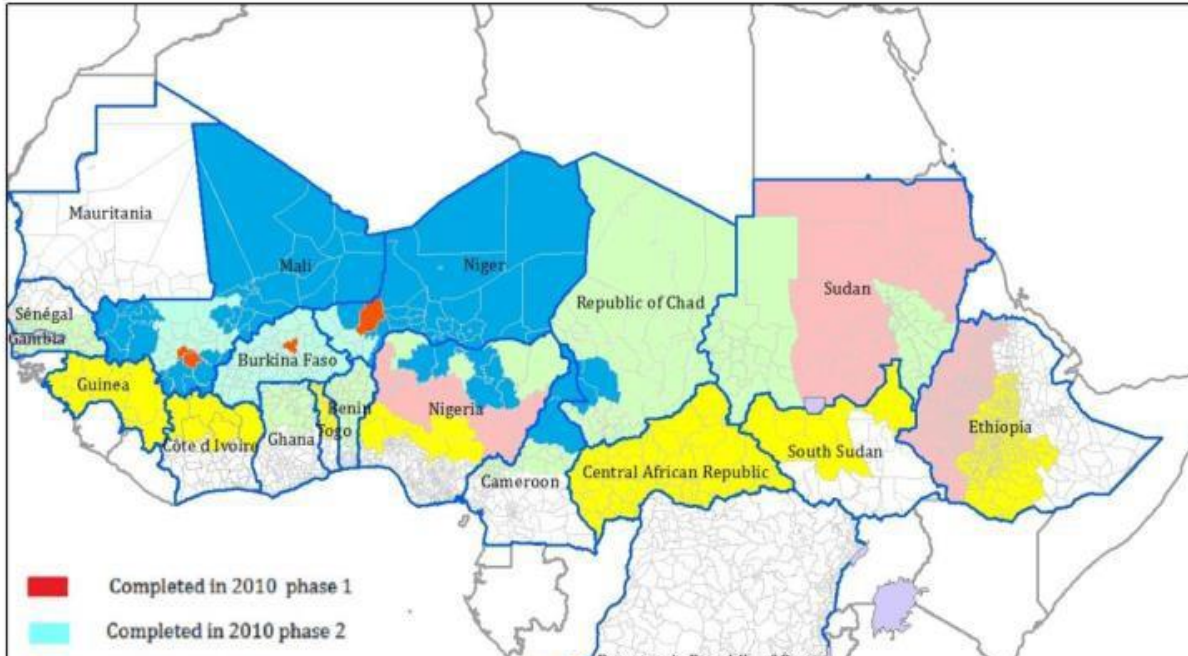




UK 2015 Immunisation Schedule

AGE	Immunisation (Vaccine Given)
2 months	• DTaP/IPV(polio)/Hib (diphtheria, tetanus, pertussis (whooping cough), polio, and <i>Haemophilus influenzae</i> type b) - all-in-one injection: Pediacel®; plus: • PCV (pneumococcal conjugate vaccine) - in a separate injection: Prevenar 13®. • Rotarix® (rotavirus gastroenteritis) - oral route (drops). • Bexsero® (meningitis B)
3 months	• DTaP/IPV(polio)/Hib (2nd dose: Pediacel®); plus: • MenC (meningitis C) - in a separate injection: NeisVac-C® or Menjugate Kit®. • Rotarix® (rotavirus gastroenteritis) - oral route (drops).
4 months	• DTaP/IPV(polio)/Hib (3rd dose: Pediacel®); plus: • PCV (2nd dose: Prevenar 13®) - in a separate injection. • Bexsero® (2nd dose: meningitis B)
Between 12 and 13 months	• Hib/MenC (combined as one injection) - 4th dose of Hib and 2nd dose of MenC: Menitorix®; plus: • MMR (measles, mumps and rubella) - combined as one injection: Priorix® or MMR II®; plus: • PCV (3rd dose: Prevenar 13®) - in a separate injection. • Bexsero® (3rd dose: meningitis B)
2, 3 and 4 years	• Nasal flu spray Fluenz®.
3 years and four months to	• Pre-school booster of DTaP/IPV(polio): Repevax® or Infanrix-IPV®; plus: • MMR (second dose: Priorix® or MMR II®) - in a separate injection.

Men A Konjuge aşısı (MenAfriVac) (Kitlemel aşılama, 1-29 yaşı)



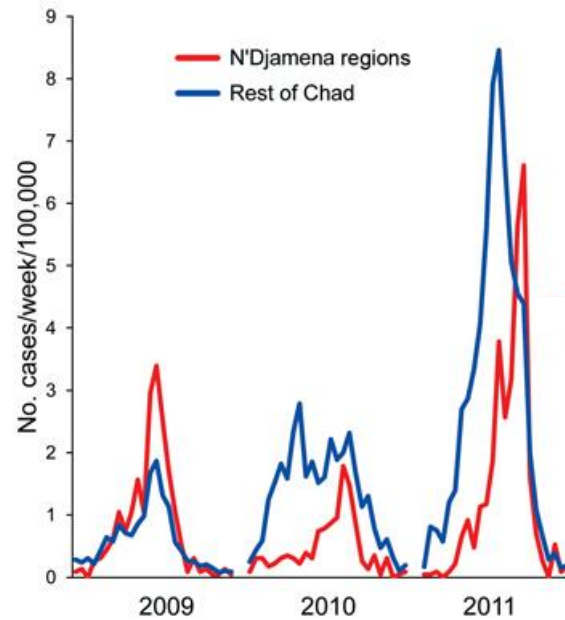
Since mass introduction campaigns started in 2010, over 153 million persons have received the vaccine in 12 countries of the African meningitis belt: Benin, Burkina Faso, Cameroon, Chad, Ethiopia, Ghana, Mali, Niger, Nigeria, Senegal, Sudan, and The Gambia. Evaluation of vaccine safety and effectiveness consistently demonstrated that MenAfriVac

0 1 2

WHO - Serum Institute of India işbirliği ile PsA-TT aşısı

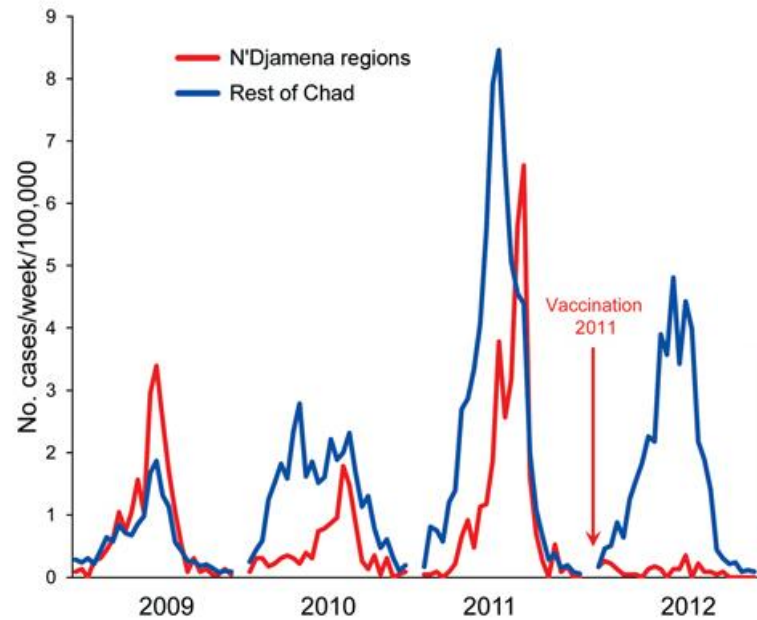
MenAfriVac etkinliği

Incidence of reported cases of meningitis in Chad, 2009–12



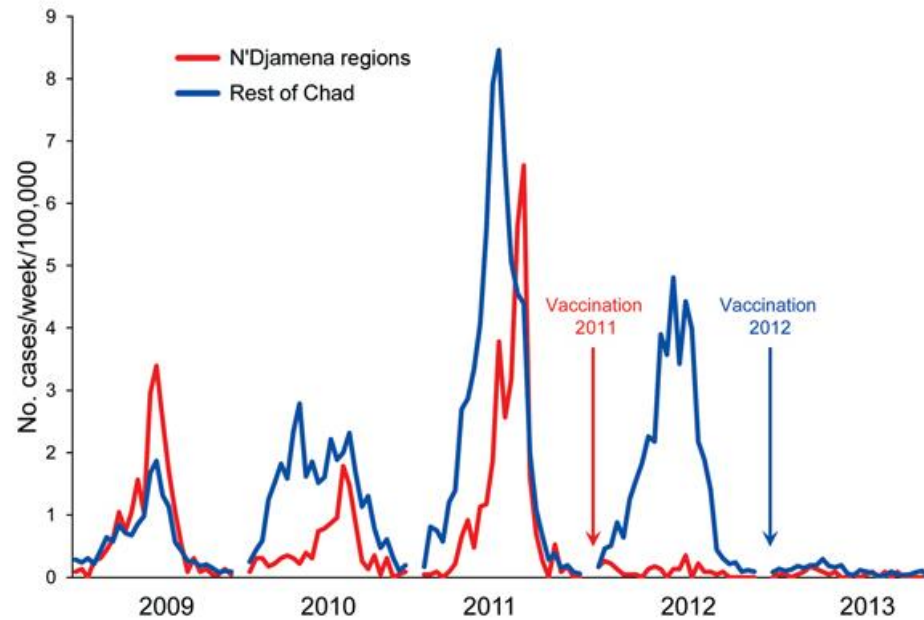
MenAfriVac etkinliği

Incidence of reported cases of meningitis in Chad, 2009–12



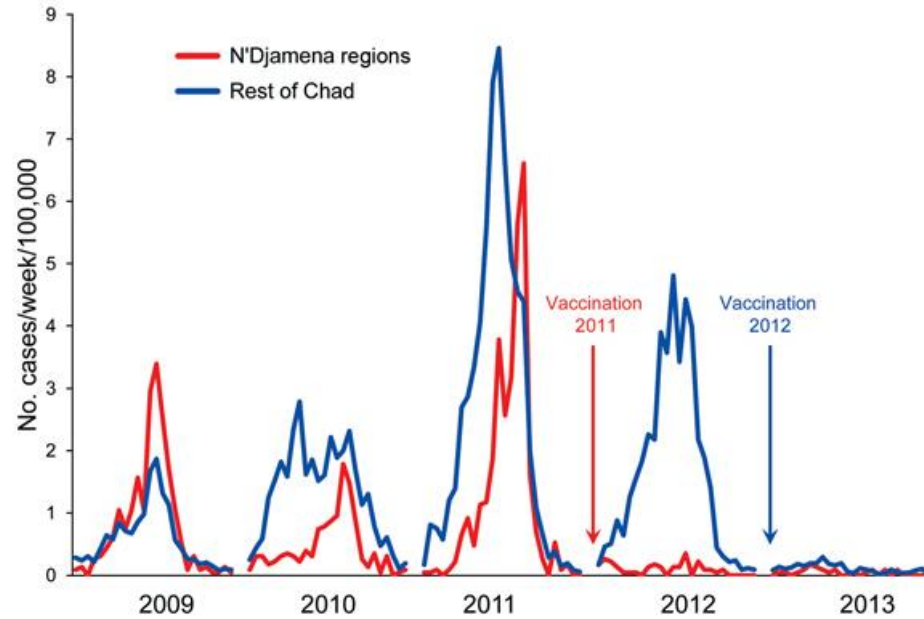
MenAfriVac etkinliği

Incidence of reported cases of meningitis in Chad, 2009–12

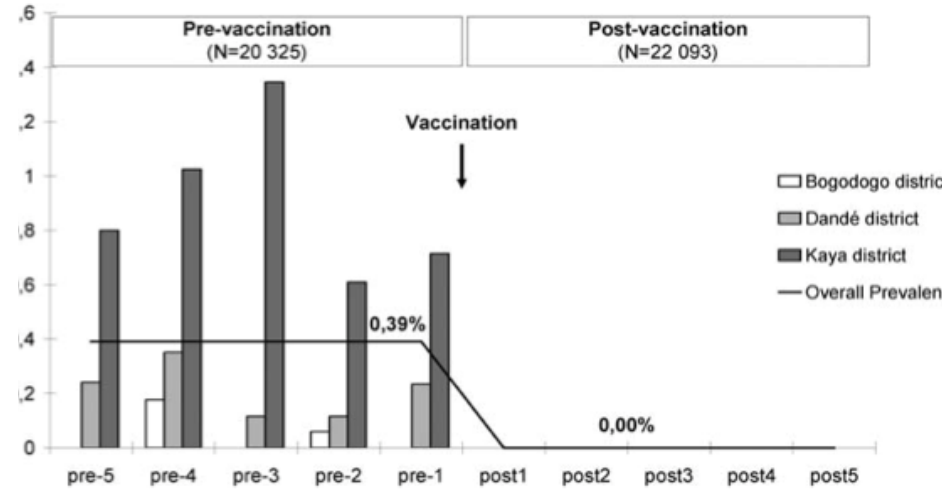


MenAfriVac etkinliđi

Incidence of reported cases of meningitis in Chad, 2009–12



Carriage of serogroup A *Neisseria meningitidis* at 5 timepoints before (pre-5 to pre-1) and 5 timepoints after (post1 to post5) MenAfriVac vaccination.

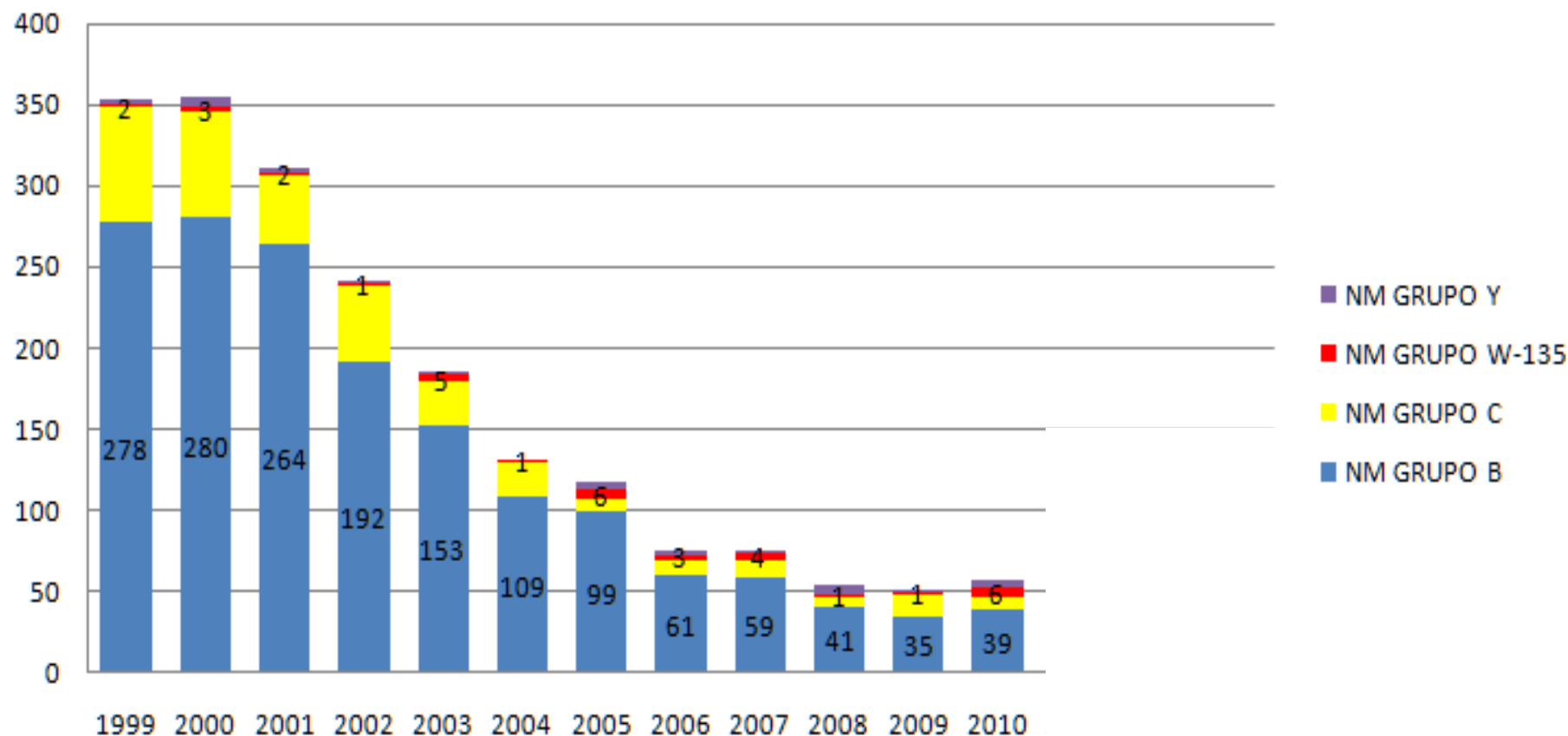


MenAfrivac, serogroup A'ya bađlı invaziv meningokok hastalıđının ve taşıyıcılıđın önlenmesinde çok etkili bulunmuştur.

Şili'de meningokok hastalığı



Distribución de Serogrupos de N.meningitidis.
Chile, años 1999-2013* (SE 45)



Şili

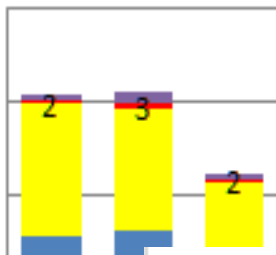
Plan Nacional de Inmunizaciones

Calendario de VACUNACIÓN 2014

ğ1

Dis

400
350
300



EDAD	VACUNA	PROTEGE CONTRA
Recién Nacido	BCG	Tuberculosis
2, 4 Meses	Pentavalente	Hepatitis B Difteria, Tétanos, Tos Convulsiva H. Influenza B
	Polio oral	Poliomielitis
	Neumocócica conjugada	Enfermedades por Neumococo
6 Meses	Pentavalente	Hepatitis B Difteria, Tétanos, Tos Convulsiva H. Influenza B
	Polio oral	Poliomielitis
	Antimeningocócica	Enfermedad Meningocócica

Kasım 2012 tarihinde 9 ay-5 yaş arası çocuklarda MenACW-D (Menactra) uygulaması başladı ve o tarihten beri aşılanmış çocukların hiçbirinde W ilişkili meningokok enfeksiyonu saptanmadı.

Borrow R et al. Poster presented at XIXth International Pathogenic Neisseria Conference (IPNC), 12-17 Oct 2014. Asheville, NC, USA

1999 2000 2001

*Sólo para la Región de Arica y Parinacota y Tarapacá

Salud Responde
600-360-7777

www.minsal.cl
Búscanos en



2013



Türkiye’de meningokok aşısı (menACWY aşısı) Kime, Ne Zaman Yapılmalı?

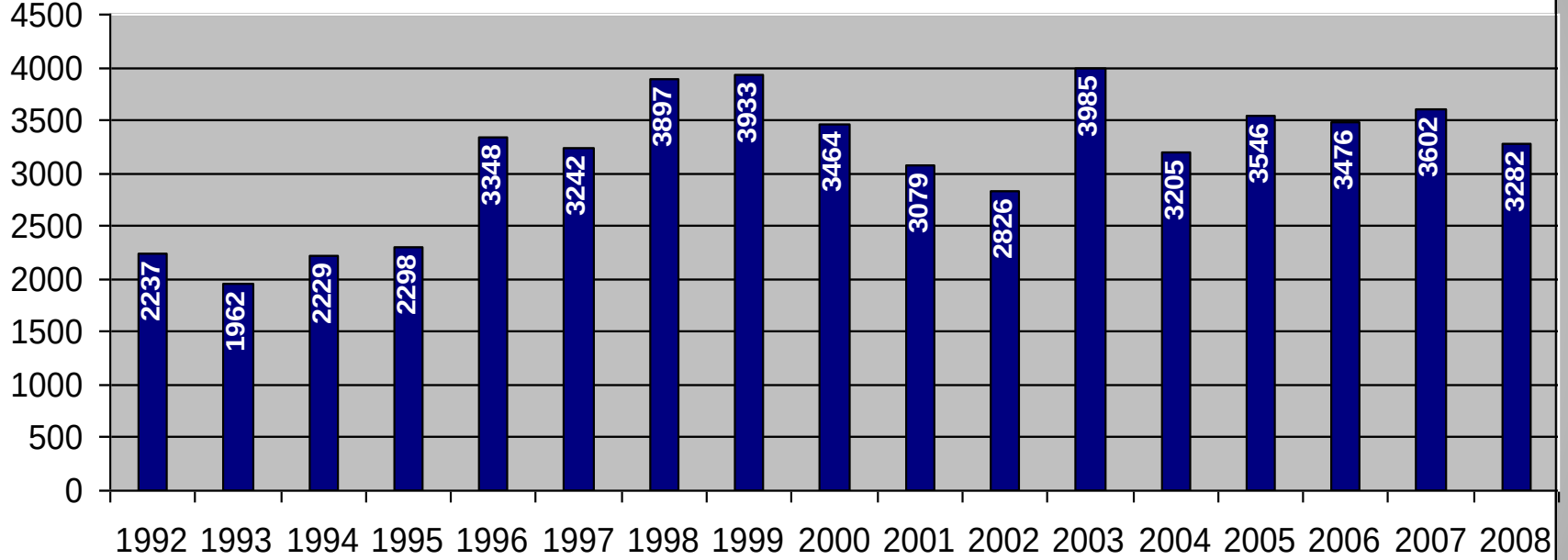
Türkiye’de IMH epidemiyolojisi

- **IMH insidansı**
- **Mortalitesi**
- **Yaş dağılımı**
- **Serogrup dağılımı**

Türkiye’de IMH epidemiyolojisi (resmi veriler)

- **IMH insidansı**
- **Mortalitesi**
- Yaş dağılımı
- Serogrup dağılımı

Türkiye’de meningokok hastalığı nedenli ölümler

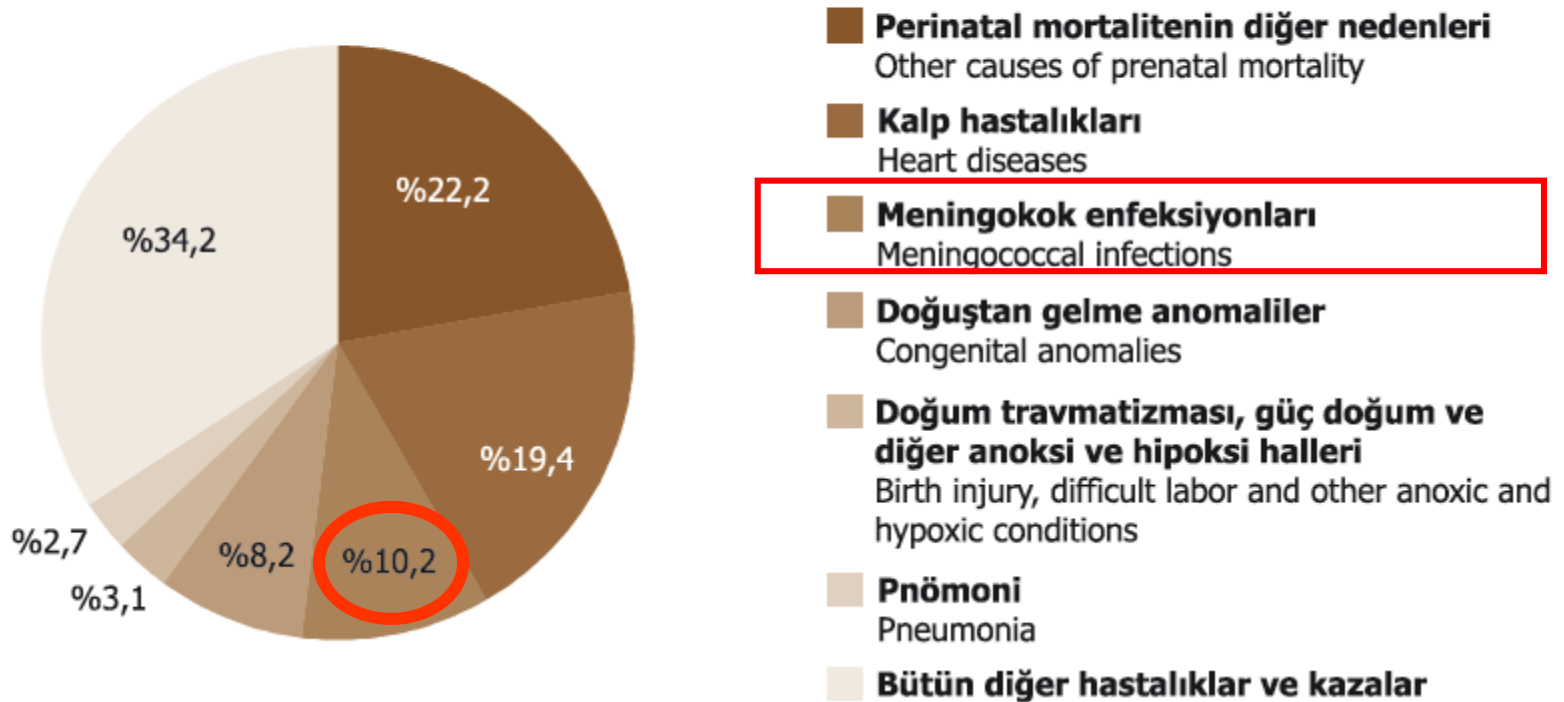


TÜİK verilerine göre yıllık meningokokal enfeksiyon kaynaklı ölümler, 1992-2008
Grafik referanslardan uyarlanmıştır

Beş yaş altı çocuklarda ölüm nedenleri (2008)

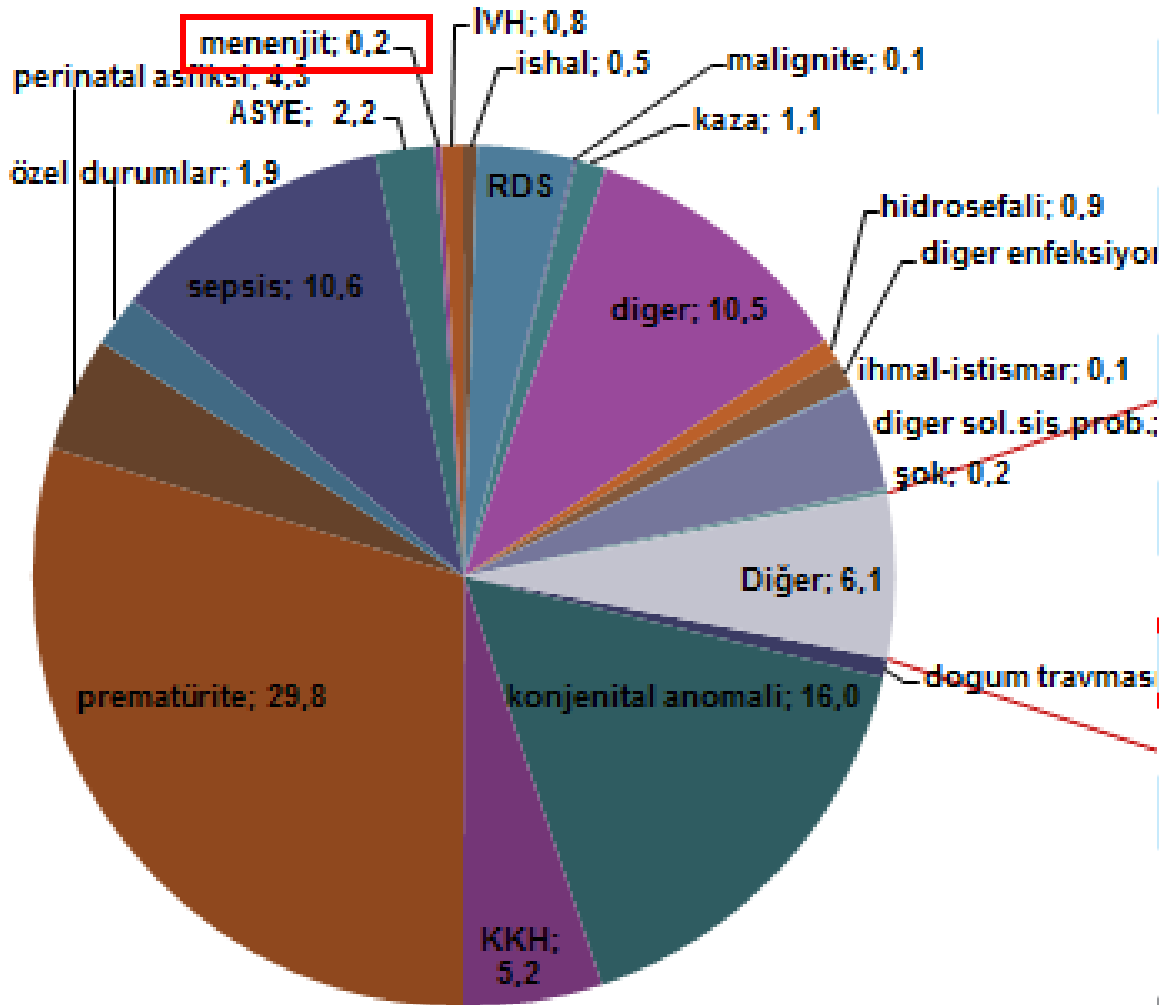
2.2 Beş yaş altındaki çocuk ölümlerinin ölüm nedenlerine göre oranı, 2008

Proportion of child mortality under five years of age by causes of death, 2008



Tablo 8.5 Bildirilen Bebek Ölüm Nedenleri, Türkiye, Sağlık Bakanlığı

2009 yılı nedenlerine göre bebek ölümleri



%'si

%31

%17

%10

%8

%6

%3

%1

%1

%1

<%1

<%1

<%1

<%1

%6

%15

%100.0

Türkiye’de meningokok hastalığı epidemiyolojisi



- Meningokok hastalığı kaynaklı ölümler (1992 -2009)
 - TC Sağlık Bakanlığı → 49-171
 - Türkiye İstatistik Kurumu (TÜİK) → 1982-3985
- TÜİK verileri ölüm tutanaklarından
- Sağlık bakanlığı: Bildirimler yetersiz

Dinleyici EC, Ceyhan M. The dynamic and changing epidemiology of meningococcal disease at the country-based level: the experience in Turkey. Expert Rev Vaccines 2012; 11(5): 515-8.

Bakır M. Meningococcal serogroup B disease in Turkey: A guess or reality? Hum Vaccin Immunother 2014; 10(6): 1721-24.

Türkiye’de İMH epidemiyolojisi

A Prospective Study of Etiology of Childhood Acute Bacterial Meningitis, Turkey

Mehmet Ceyhan,* Inci Yildirim,* Paul Balmer,† Ray Borrow,† Bunyamin Dikici,‡ Mehmet Turgut,§
Nese Kurt,§ Aysel Aydogan,¶ Cigdem Ecevit,¶ Yasar Anlar,# Ozlem Gulumser,# Gonul Tanir,**
Nuran Salman,†† Nezahat Gurler,†† Nevin Hatipoglu,†† Mustafa Hacimustafaoglu,‡‡ Solmaz
Celebi,‡‡ Yavuz Coskun,§§ Emre Alhan,¶¶ Umit Celik,¶¶ Yildiz Camcioglu,†† Gulden Secmeer,*
Deniz Gur,## and Steve Gray†

Türkiye’de İMH epidemiyolojisi

RESEARCH PAPER

Human Vaccines & Immunotherapeutics 10:09, 1–7; October 1, 2014; © 2014 Taylor & Francis Group, LLC

Meningitis Caused By Neisseria Meningitidis, Hemophilus Influenzae Type B and Streptococcus Pneumoniae During 2005–2012 in Turkey

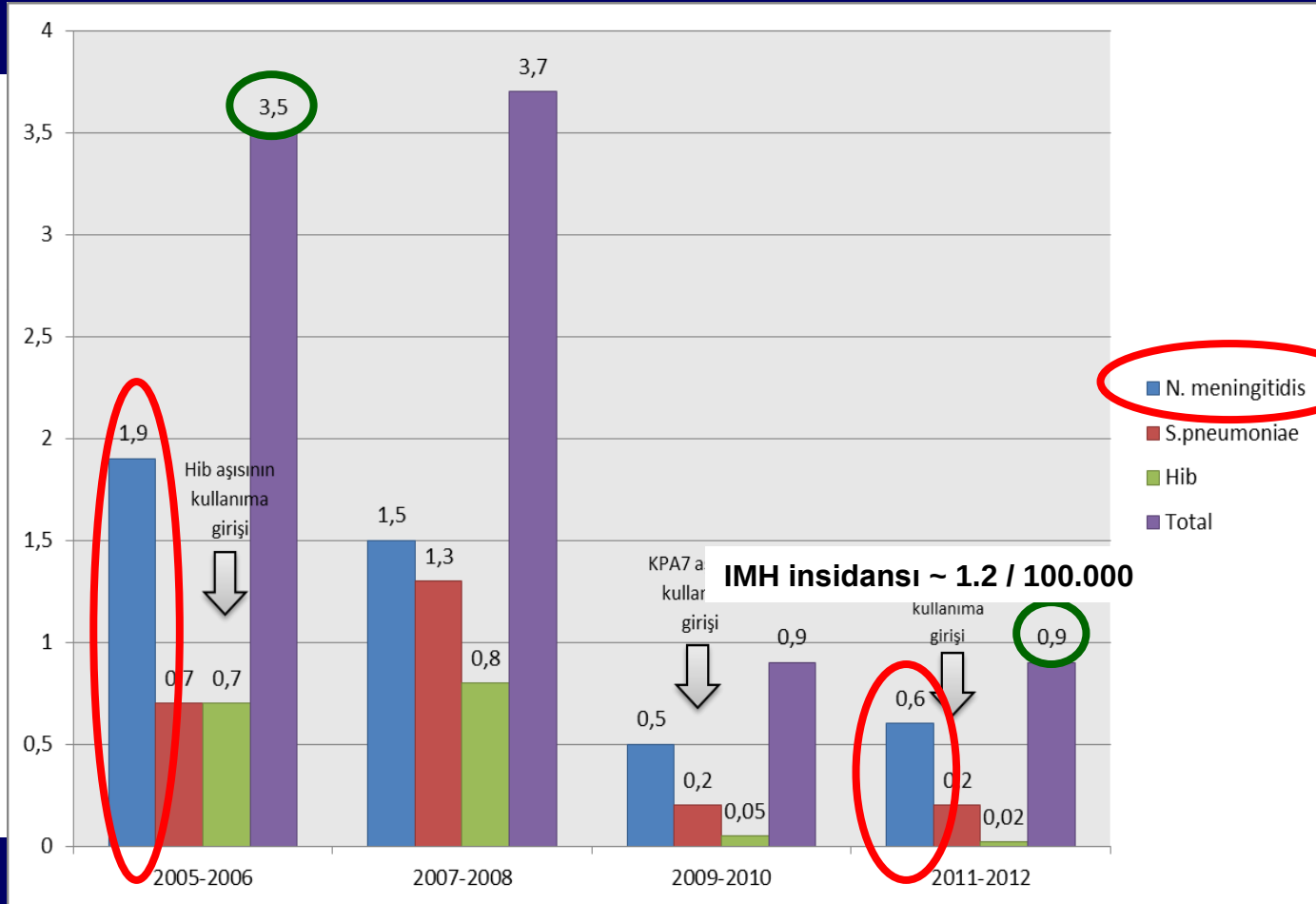
A Multicenter Prospective Surveillance Study

Mehmet Ceyhan^{1,†}, Nezahat Gürler^{2,†}, Yasemin Ozsurekci^{1,†,*}, Melike Keser^{3,†}, Ahmet Emre Aycan^{1,†}, Venhar Gurbuz^{1,†}, Nuran Salman^{4,†}, Yildiz Camcioglu^{5,†}, Ener Cagri Dinleyici^{6,†}, Sengul Ozkan^{7,†}, Gulnar Sensoy⁸, Nursen Belet^{8,†}, Emre Alhan⁹, Mustafa Hacimustafaoglu^{10,†}, Solmaz Celebi^{10,†}, Hakan Uzun^{11,†}, Ahmet Faik Oner^{12,†}, Zafer Kurugol^{13,†}, Mehmet Ali Tas^{14,†}, Denizmen Aygun^{15,†}, Eda Karadag Oncel^{1,†}, Melda Celik^{1,†}, Olcay Yasa^{16,†}, Fatih Akin^{17,†}, and Yavuz Coşkun^{18,†}

Türkiye'de İMH insidansı

- Şubat 2005 – Şubat 2006
- Lab komfirme bakteriyel menenjit insidansı 3,5 / 100.000
(% 56,5 *N. meningitidis*)
- Lab komfirme meningokok menenjiti insidansı 1,9 /100.000
- Yaklaşık İnvaziv Meningokok Hastalığı insidansı ~ 4 /100.000

Türkiye'de İMH insidansı



Review of invasive meningococcal disease during the last 40 years in Turkey

Expert Rev. Vaccines Early online, 1–9 (2015)

Mustafa Bakir*¹ and
Serdar Altinel²

Due to the lack of comprehensive surveillance data representing Turkey, the authors aimed to derive information by panoramically reviewing all articles related to invasive meningococcal disease (IMD) published in the last 40 years. The following databases were reviewed: Ulakbim

We believe that the incidence of IMD was underestimated since the antibiotic overuse is widespread and molecular diagnostic methods such as PCR are not routinely used in clinical practice.

A vaccination strategy for serogroups B and W135 targeting the first 5 years, covering especially the first 12 months, would be appropriate.

Table 2 Countries with moderate endemic rates (2–10 cases/100,000 population per year)

Country	Year	Incidence/ 100,000 population	Predominant serogroup	Source	Comments
African Region					
South Africa	2000–2005	0.8–4	B in Western Cape	[22]	
Eastern Mediterranean Region					
No country in this region is in the moderate rate category					
European Region					
Belgium	1999–2010	2.9 (pre-vaccine) 0.89 (post-vaccine)	B, C	[23,24]	A conjugate vaccine for group C was introduced in 2002
Denmark	1999–2010	1.19–3.5	B	[23,24]	
Greece		0.49–2.0	C	[23,24]	A conjugate vaccine for group C introduced in 2001 in pediatric population[25]
Ireland		14.3 (pre-vaccine) 2.19 (post-vaccine)	B, C	[23,24]	A conjugate vaccine for group C was introduced in 2001
Iceland		7.6 (pre-vaccine) 0.6 (post-vaccine)	B, C	[23,24]	A conjugate vaccine for group C was introduced in 2002
Lithuania	2004–2010	1.4–2.6	*	[23,24]	
Luxemburg	1999–2010	0.2–5.68	*	[23,24]	
Malta	1994–2007	0.8–8.9	B, C	[26]	2 peaks in 2000 and 2006
Netherland	1999–2010	3.6 (pre-vaccine) 0.86 (post-vaccine)	B, C	[23,24]	A conjugate vaccine for group C was introduced in 2002
Norway	1992–2010	0.8–4.6	B	[23,27]	
Portugal	2000–2010	0.74–3.0	B, C	[23,28]	
Spain	1999–2010	3.52 (pre-vaccine) 0.88 (post vaccine)	B, C	[23,24]	A conjugate vaccine for group C introduced in 2001
Switzerland	1999–2004	1.16–2.36	C	[24]	A conjugate vaccine for group C introduced in 2005
Turkey	1997–2005	0.3–2.2 5.4 (pre-vaccine)	*	[28]	



DSÖ'ne göre Türkiye **ORTA** endemisite kategorisinde bir ülkedir.



World Health
Organization

Organisation mondiale de la Santé

Weekly epidemiological record Relevé épidémiologique hebdomadaire

18 NOVEMBER 2011, 86th YEAR / 18 NOVEMBRE 2011, 86^e ANNÉE

No. 47, 2011, 86, 521–540

<http://www.who.int/wer>

Contents

521 Meningococcal vaccines: WHO
position paper, November
2011

539 Monthly report
on dracunculiasis cases,
January–August 2011

**Meningococcal vaccines:
WHO position paper,
November 2011**

**Note de synthèse: position
de l'OMS sur les vaccins
antiméningococciques,
novembre 2011**

2011 WHO Recommendations*

Routine immunisation recommended

- High epidemic rates (>10 cases/100 000 population/year) IMD
- Intermediate endemic rates (2–10 cases/100 000 population/year)
 - Turkey is considered at moderate endemic risk for meningococcal disease**

Children* ± large scale catch up**

- **Children < 5 years of age (+ other risk groups, e.g.: college newcomers)**

**** e.g.: 9 months to 18 years (depending on the endemicity of the countries)**

* WHO position paper November 2011-11-28

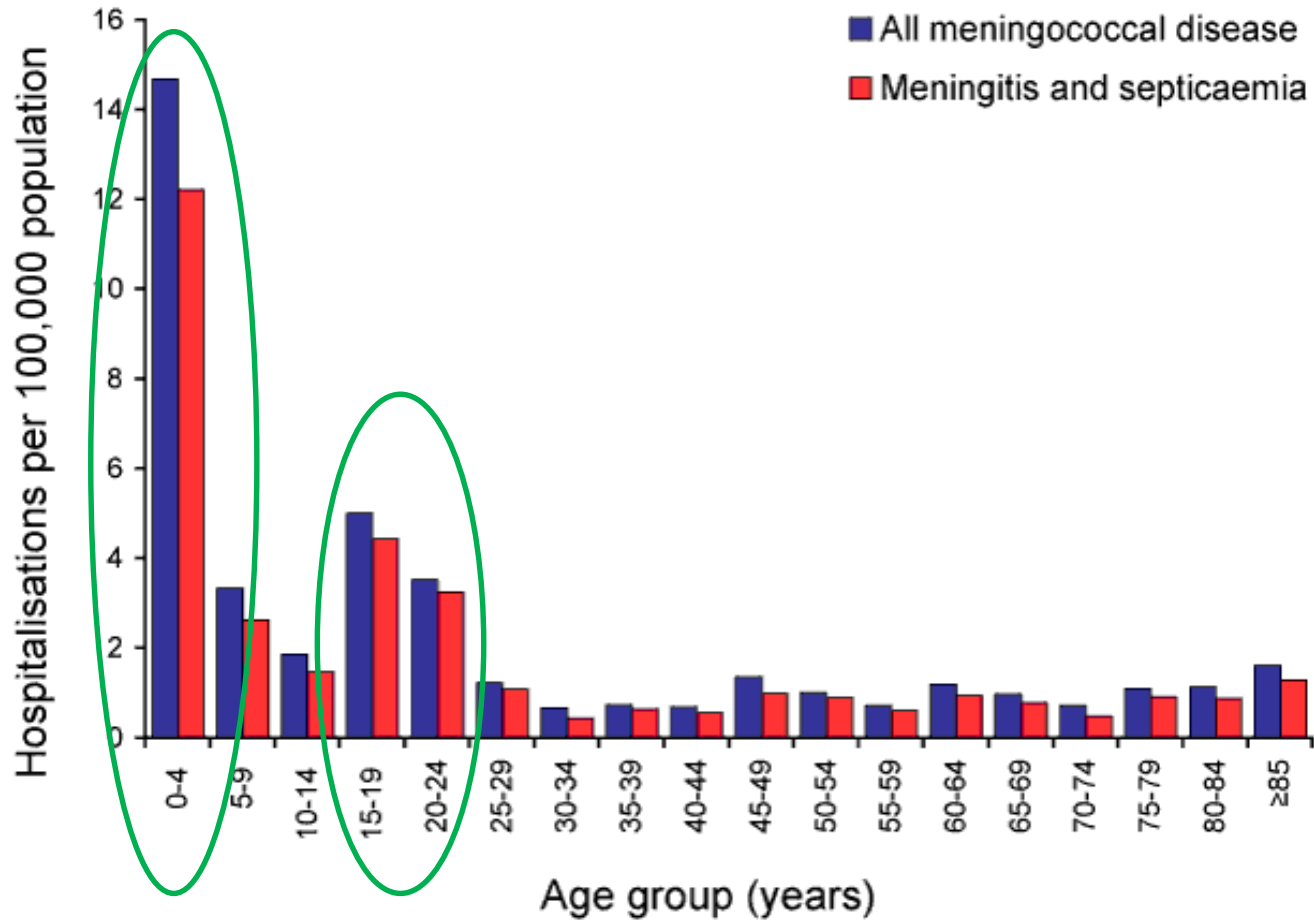
** SAGE Meningococcal background paper 2011

Türkiye’de IMH epidemiyolojisi

- IMH insidansı
- Mortalitesi
- Yaş dağılımı

IMH yaş dağılımı

ABD, 2002-2011



Source: Unpublished data, Active Bacterial Core surveillance (ABCs) system.

Yaşa göre İMH vakalarının dağılımı

Ref. No.	N	Olgu klinik dağılımı		Olgu yaş dağılımı		Mortalite *	Bölgesi
		Meningokoksemi (%)	Menenjit (%)	0-5 yaş	6-17 yaş		
Akyıldız	65	% 46,1	%30,7	% 81	% 19	%18,44	Istanbul
	83	%73,49	%26,51	% 66	% 44	%15,60	Erzurum
Elmastaş	41	%21,9	%48,8	% 66	% 44	Bilinmiyor	İzmir
Ersoy	85	%30,59	%20	Bilinmiyor	Bilinmiyor	%18,82	İzmir
Özdal	143	-	-	%71		%17	Diyarbakır
Kepenekli	7	%42	% 57	% 90	% 10	Bilinmiyor	Ankara
Kulcu	16	%87,50	%12,5	% 93	% 7	%43,75	Istanbul
Tüysüz	140	%78	%22	% 60	% 40	%8,62	Istanbul

Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom, United States, Uruguay, Vietnam, and Zambia.

Meningokok olgularının ortalama %74'ü 0-5 yaş arasındadır.

Adölesan piki görölmez.

Bakır M, et al. Expert Rev Vaccines. 2015 Aug;14:1089-97.

Türkiye’de serogrup dağılımı-değişimi (1974-2012)

Yazar	Yıllar	Bölge	Serogrup Dağılımı, N (%)							
			A	B	C	W	Y	X	NG	Toplam
Berkman	1974-1979	Ankara	33 (%29)	53 (%46)	29 (%25)	0 (%0)	0 (%0)	0 (%0)	0 (%0)	115
Berkman	1980-1984	Ankara	8 (%32)	13 (%52)	4 (%16)	0 (%0)	0 (%0)	0 (%0)	0 (%0)	25
Tuncer	1987	Ankara	-	4 (%5)	36 (%95)	0 (%0)	0 (%0)	0 (%0)	0 (%0)	
Elmastaş	1990-1994	İzmir	1 (%2)	4 (%10)	36 (%88)	0 (%0)	0 (%0)	0 (%0)	0 (%0)	41
Ceyhan	2005-2006	Türkiye	%0.7	%31.1	0	%42.7	%2.2	0	%23.2	243
Toprak	2006-2009	Türkiye	1 (%2)	29 (%62)	2 (%4)	1 (%2)	0	1 (%2)	13 (%19)	47
Ceyhan	2005-2012	Türkiye	28 (%8.4)	87 (%26.1)	0	127 (%38.1)	3 (%0.9)	0	88 (%26.4)	333

Berkman E, Ozben G. Mikrobiyoloji Bülteni 1982;16:101-106.

Elmastaş H, ark. T Klin Pediatri 1992;1:58-61;

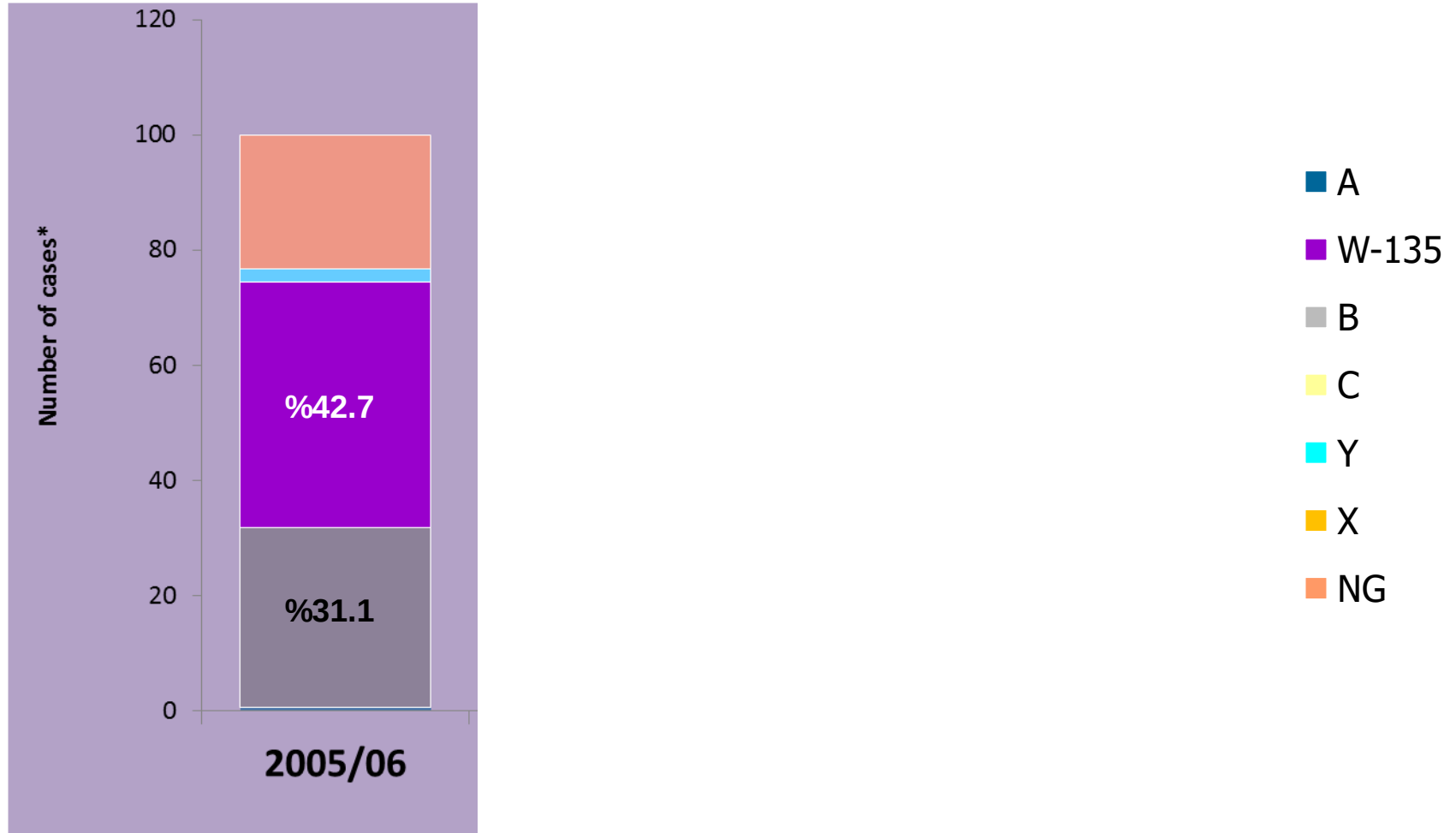
Ceyhan M, et al. Emerging Infectious Diseases 2008; 14: 1089-1096.

Toprak D, et al. PIDJ 2014; 33:1087-9.

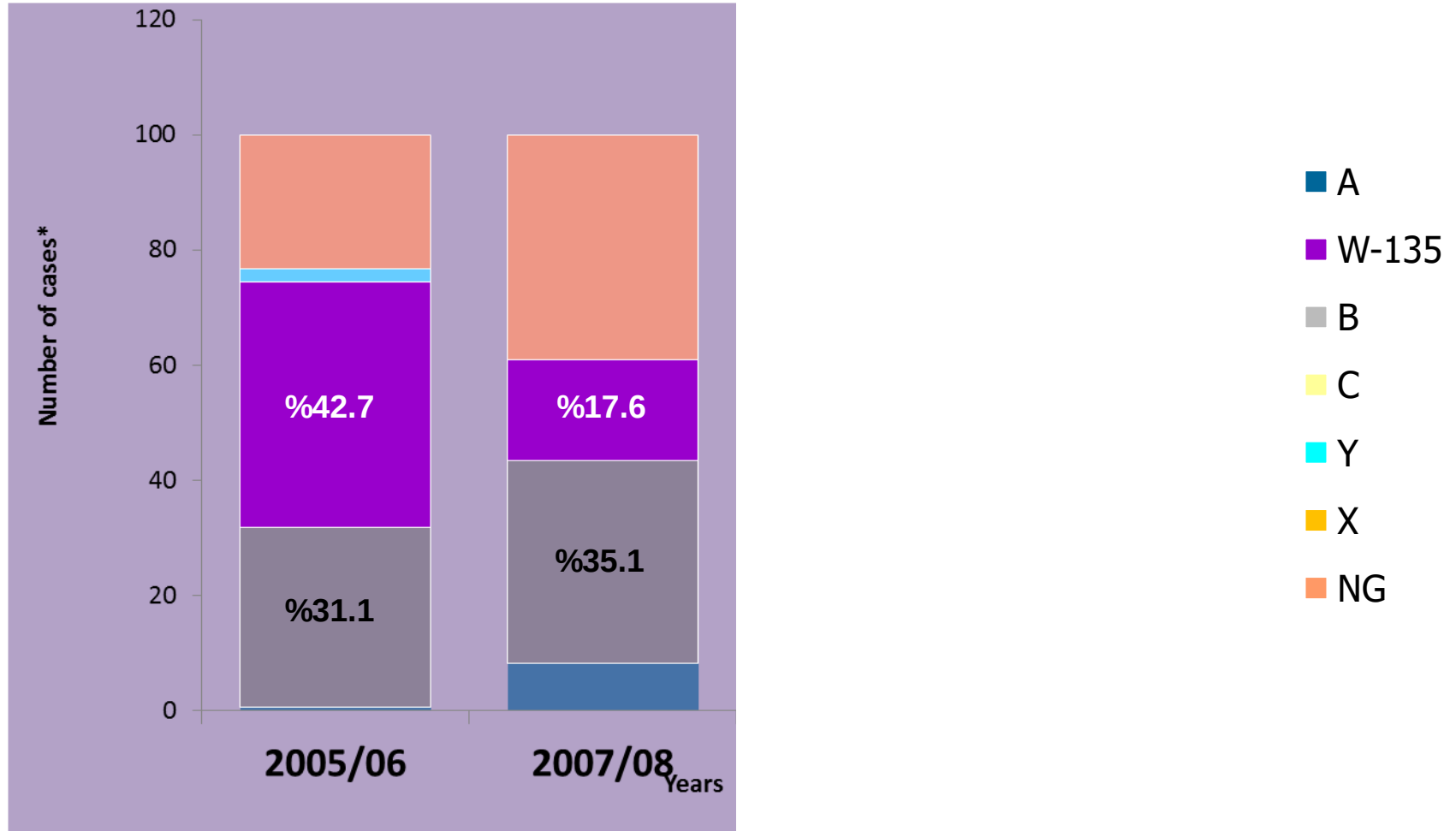
Ceyhan M, et al. Hum Vaccin Immunother 2014; 10:9, 2706-12.

Bakır M, Altınal S. Expert Rev Vaccines. 2015 Aug;14(8):1089-97.

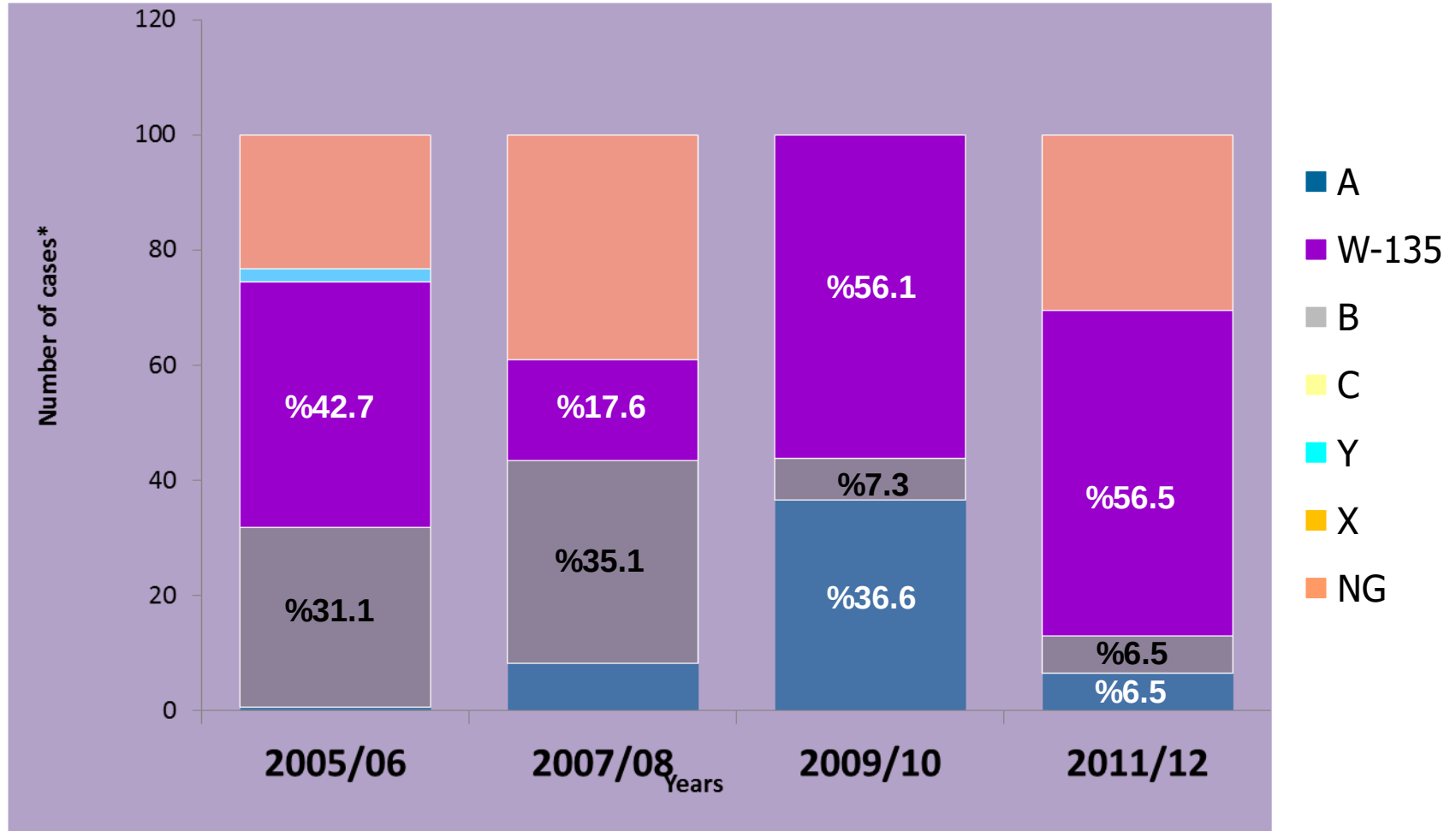
Bakteriyel menenjit etkenleri Türkiye (2005-2012)



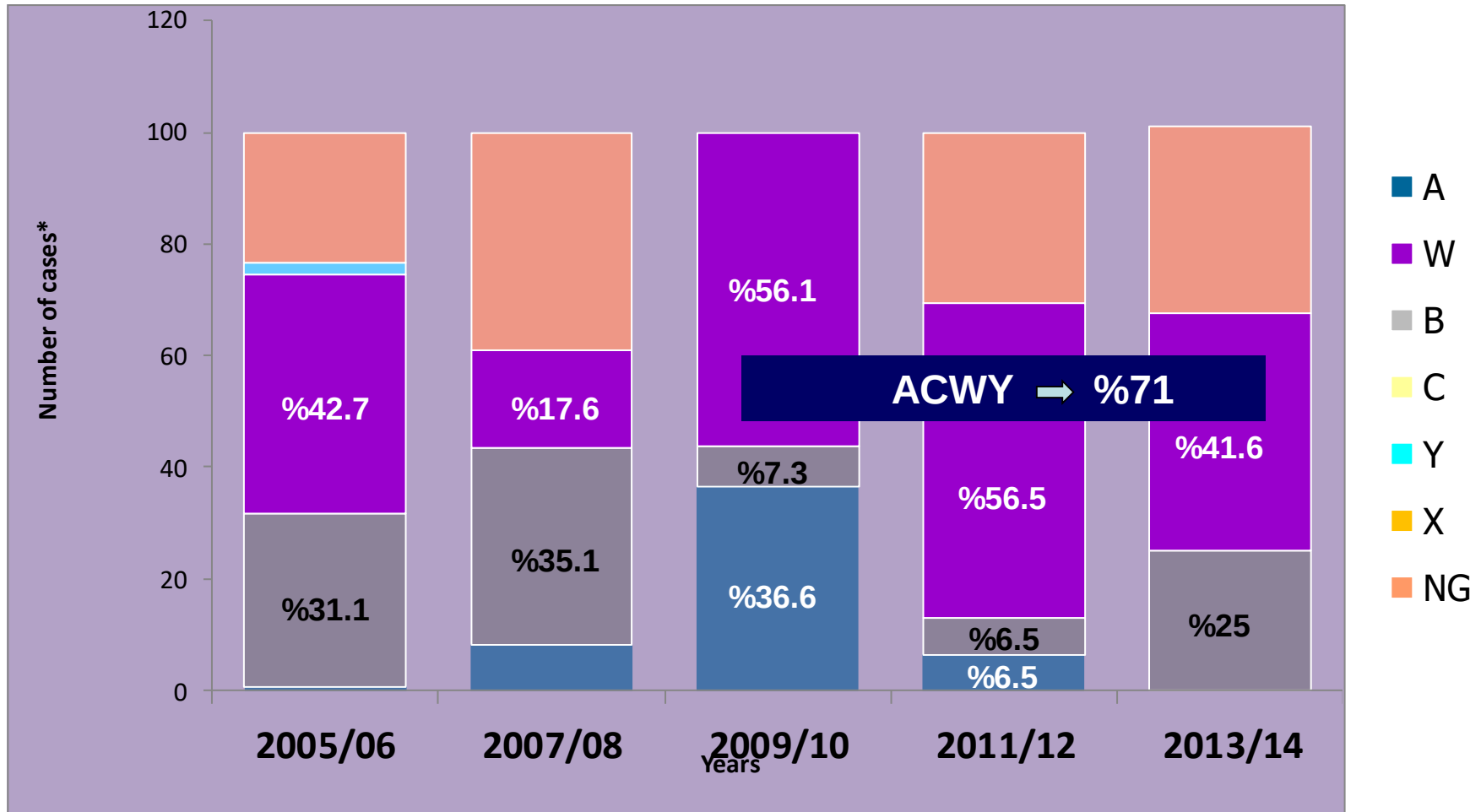
Bakteriyel menenjit etkenleri Türkiye (2005-2012)



Bakteriyel menenjit etkenleri Türkiye (2005-2012)



Bakteriyel menenjit etkenleri Türkiye (2005-2014)



ABD aşı şeması-2014

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – United States, 2014.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are in bold.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16–18 yrs
Hepatitis B ¹ (HepB)	1 st dose	2 nd dose			3 rd dose											
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			1 st dose	2 nd dose	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP; <7 yrs)			1 st dose	2 nd dose	3 rd dose			4 th dose				5 th dose				
Tetanus, diphtheria, & acellular pertussis ³ (Tdap; ≥7 yrs)														(Tdap)		
Haemophilus influenzae type b ⁴ (Hib)			1 st dose	2 nd dose	See footnote 5		3 rd or 4 th dose; See footnote 5									
Pneumococcal conjugate ⁶ (PCV13)			1 st dose	2 nd dose	3 rd dose		4 th dose									
Pneumococcal polysaccharide ⁶ (PPSV23)																
Inactivated poliovirus ⁷ (IPV) (<18 yrs)			1 st dose	2 nd dose	3 rd dose							4 th dose				
Influenza ⁸ (IV; LAIV) 2 doses for some: See footnote 8																
Measles, mumps, rubella ⁹ (MMR)							1 st dose					2 nd dose				
Varicella ¹⁰ (VAR)							1 st dose					2 nd dose				
Hepatitis A ¹¹ (HepA)								2-dose series; See footnote 11								
Human papillomavirus ¹² (HPV2: females only; HPV4: males and females)														(3-dose series)		
Meningococcal ¹³ (Hib-Men-CY ≥ 6 weeks; MenACWY-D ≥ 9 mos; MenACWY-CRM ≥ 2 mos)															1 st dose	

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Range of recommended ages during which catch-up is encouraged and for certain high-risk groups

Not routinely recommended

ABD aşı şeması-2014

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – United States, 2014.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are in bold.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19–23 mos	2–3 yrs	4–6 yrs	7–10 yrs	11–12 yrs	13–15 yrs	16–18 yrs
Hepatitis B ¹ (HepB)	1 st dose	2 nd dose			3 rd dose											
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)			1 st dose	2 nd dose	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP; <7 yrs)			1 st dose	2 nd dose	3 rd dose			4 th dose				5 th dose				
Tetanus, diphtheria, & acellular pertussis ³ (Tdap; ≥7 yrs)														(Tdap)		
Haemophilus influenzae type b ⁴ (Hib)			1 st dose	2 nd dose	See footnote 5		3 rd or 4 th dose; See footnote 5									
Pneumococcal conjugate ⁶ (PCV13)			1 st dose	2 nd dose	3 rd dose		4 th dose									
Pneumococcal polysaccharide ⁶ (PPSV23)																
Inactivated poliovirus ⁷ (IPV) (<18 yrs)			1 st dose	2 nd dose	3 rd dose							4 th dose				
Influenza ⁸ (IIV; LAIV) 2 doses for some: See footnote 8							Annual vaccination (IIV only)					Annual vaccination (IIV or LAIV)				
Measles, mumps, rubella ⁹ (MMR)							1 st dose					2 nd dose				
Varicella ¹⁰ (VAR)							1 st dose					2 nd dose				
Hepatitis A ¹¹ (HepA)							2-dose series; See footnote 11									
Human papillomavirus ¹² (HPV2: females only; HPV4: males and females)														(3-dose series)		
Meningococcal ¹³ (Hib-Men-CY ≥ 6 weeks; MenACWY-D ≥ 9 mos; MenACWY-CRM ≥ 2 mos)														1 st dose		

Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Range of recommended ages during which catch-up is encouraged and for certain high-risk groups

Not routinely recommended

IMH vakaları (ABD, 2002-2011)

TABLE 2.

Average Annual Estimated Number and Rate* of Cases of Meningococcal Disease by Age Group and Serogroup in the United States (2002-2011†)

Age Group	Serogroup B		Serogroup C		Serogroup Y		Other‡		Total	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
< 1 year	117	2.8	14	0.3	38	0.9	8	0.2	177	4.3
0 to 5 months	%66	3.6	5	0.3	23	%30	6	0.3	108	5.3
6 to 11 months	43	2.1	6	0.4	15	1.6	3	0.1	69	3.4
1 year	28	0.3	0	0.0	15	1.6	3	0.1	42	1.0
2 to 4 years	38	0.3	0	0.0	15	1.6	3	0.1	69	0.6
5 to 10 years	31	0.3	0	0.0	15	1.6	3	0.1	62	0.3
11 to 18 years	28	0.3	0	0.0	15	1.6	3	0.1	124	0.4
19 to 21 years	26	0.3	0	0.0	15	1.6	3	0.1	68	0.5
22 to 24 years	21	0.3	0	0.0	15	1.6	3	0.1	51	0.5
25 to 64 years	93	0.3	0	0.0	15	1.6	3	0.1	368	0.5
≥ 65 years	20	0.1	33	0.1	114	0.3	19	0.1	186	0.1
Total	402	0.1	305	0.1	365	0.1	76	0	1,146	0.1

* Per 100,000 population.

†Active Bacterial Core Group (ABC) cases from 2002 to 2011 estimated in the US population with 18% correction for underreporting. In 2010, estimated case counts from ABCs were lower than cases reported to the National Notifiable Diseases Surveillance System and might not be representative.

‡Includes serogroup W135, nongroupable, and other serogroups.

(From Cohn et al¹, with permission)

183/288

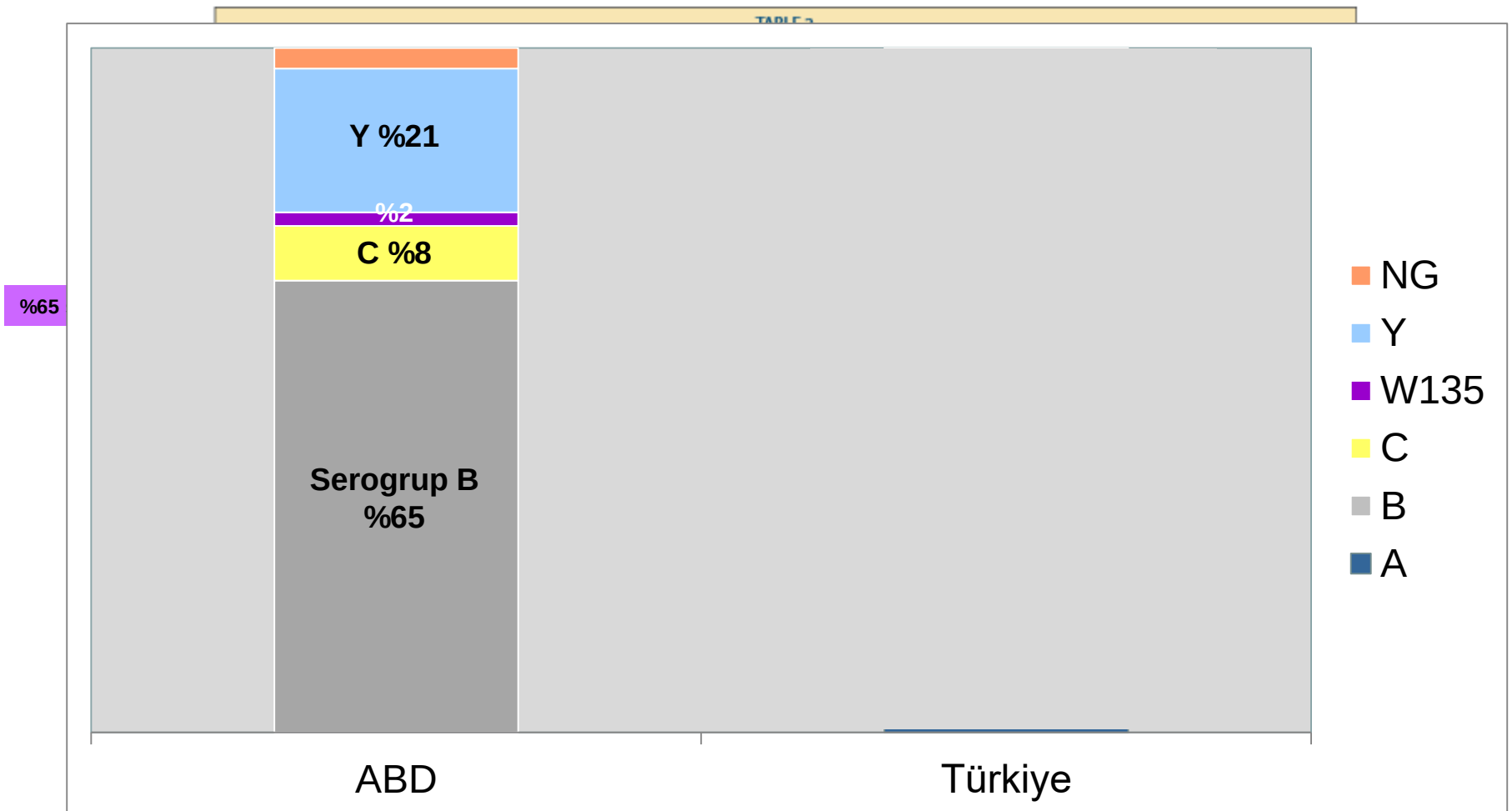
%65

As of yet, there has not been universal adoption of this immunization in the infant population by parents or providers. Factors that weigh against the implementation of a national routine infant program include the prevention of only 40 to 50 meningococcal cases, two to four deaths per year, and a relatively low case fatality among infants. Some argue that costs should not be considered a barrier because infant deaths and morbidity would be prevented. The availability of a serogroup B vaccine would improve impact and cost-effectiveness of a routine infant meningococcal vaccine program. Debate over the implementation of routine infant meningococcal vaccination in the United States is ongoing. This review focuses on vaccines for the prevention of *N. meningitidis* infec-

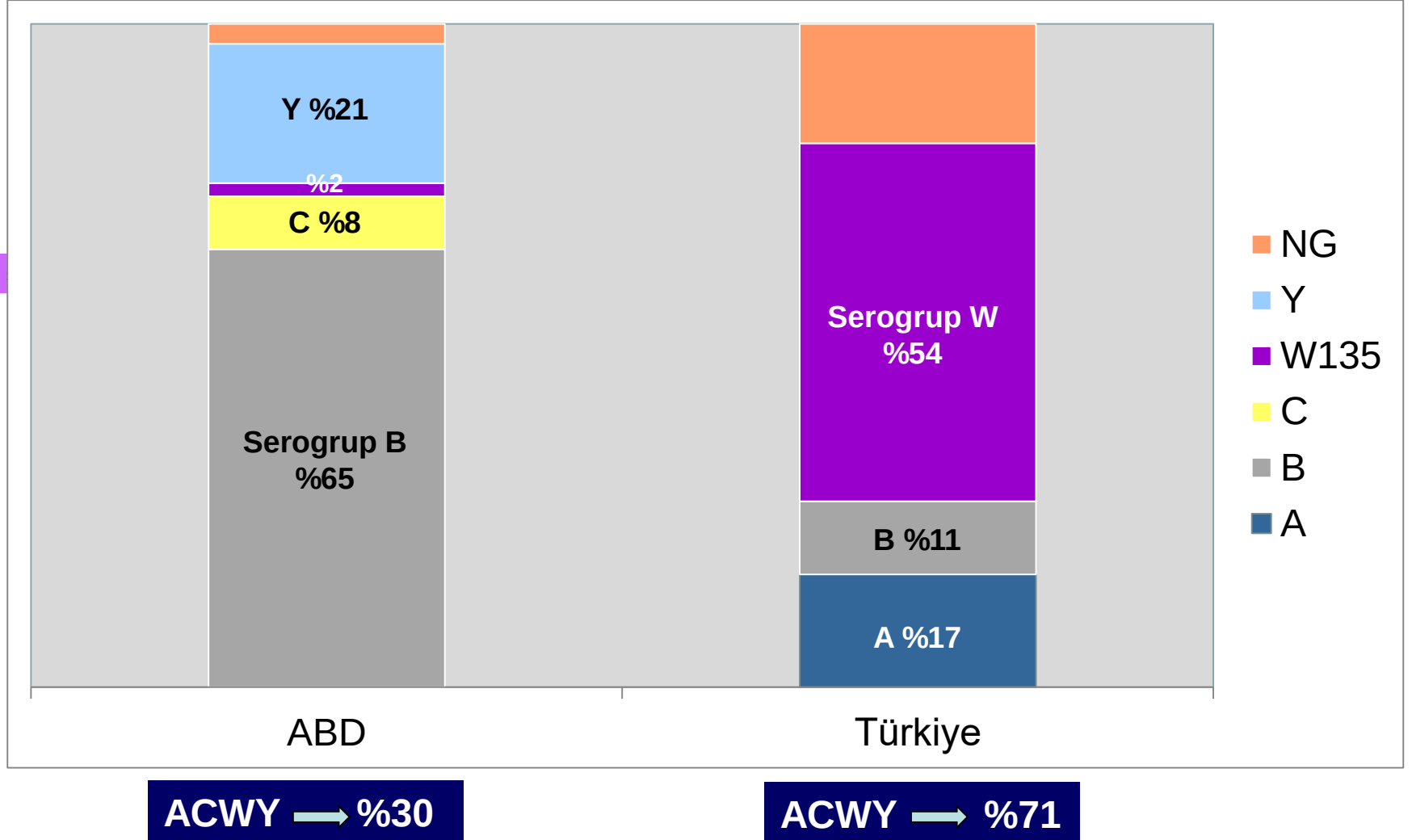


IMH vakaları (ABD)

TABLE 3



Meningokok Serogrupları Karşılaştırması (ABD-Türkiye)



Kime, Ne zaman yapılmalı?

- Ülkemizin güncel epidemiyolojik verileri (IMH insidansı, yaş ve serogrup dağılımı) ve DSÖ'nün önerileri göz önüne alındığında,
- Türkiye'nin orta endemisite ülkesi olması,
- IMH vakalarının %74'ünün 5 yaş altı çocuklar olması,
- Son 6 yılın (2009-2014) verisi göz önüne alındığında 4 bileşenli konjuge menACWY aşısının Türkiye'deki meningokok serogruplarının %71'ini kapsamaması
- Vakaların sadece %3'ü risk grubunda

Kime, Ne zaman yapılmalı?

- Ülkemizin güncel epidemiyolojik verileri (IMH insidansı, yaş ve serogrup dağılımı) ve DSÖ'nün önerileri göz önüne alındığında,
- Ülkemizde, 4 bileşenli konjuge MenACWY aşısının sadece risk gruplarına değil, özellikle 5 yaş altı tüm sağlıklı çocuklara uygulanması daha doğru bir yaklaşımdır.

Kime, Ne zaman yapılmalı?

- **Ülkemizin güncel epidemiyolojik verileri (IMH insidansı, yaş ve serogrup dağılımı) ve DSÖ'nün önerileri göz önüne alındığında,**
- **Ülkemizde, 4 bileşenli konjuge MenACWY aşısının sadece risk gruplarına değil, özellikle 5 yaş altı tüm sağlıklı çocuklara uygulanması daha doğru bir yaklaşım olacaktır.**
- **Ancak, meningokok aşıları hakkında en doğru kararı vermek için labratuvar bazlı sürveyans yapılması ve ülkemize özgü IMH yükü ve serotip dağılımının sürekli izlenmesi gereklidir.**

Korunmak tüm çocukların hakkı



Sabriniz için teşekkür ederim...