BAĞIŞIKLAMADA YENİ YAKLAŞIMLAR: MATERNAL AŞILAMA VE KOZA STRATEJİSİ

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YAŞAMIN ERKEN DÖNEMİNDE KORUNMA STRATEJİLERİ

Herd İmmünite Sağlanması

Adolesan ve Erişkin Aşılama

KOZA STRATEJİSİ

Maternal İmmünizasyon

Mevcut aşıların etkin kullanılması

Neonatal aşılama

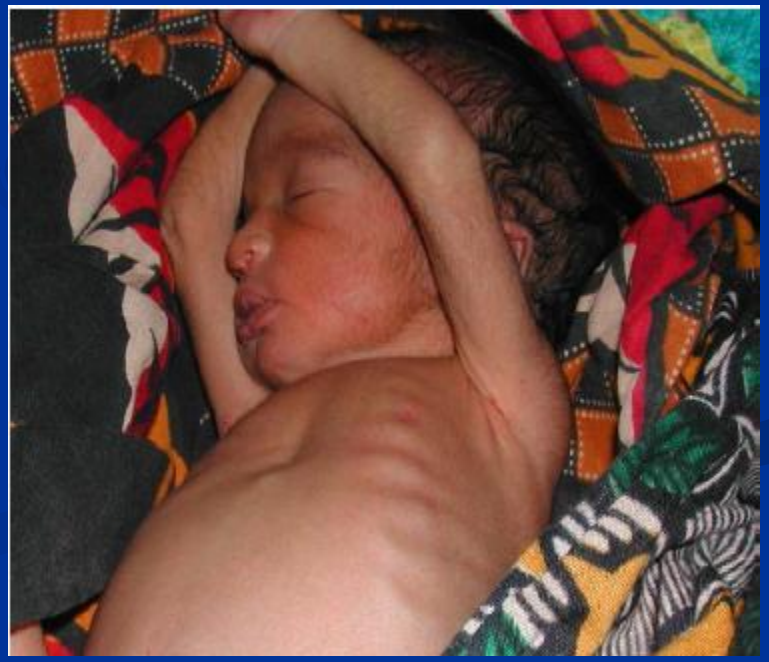
Gebelerde aşılama

Vaccine 25 (2007) 2634–2642

NEDEN GEBE AŞILAMASI ?

NEDEN GEBE AŞILAMASI ??

- Yenidoğan bebekler birçok enfeksiyon hastalığı açısından artmış morbidite ve mortalite göstermektedir.
- Yenidoğan immün sistemi immatür olup relatif olarak da yetersizdir.
- Aktif bağışıklama YD'da nadiren başarılıdır.



NEDEN GEBE AŞILAMASI ??

- Günümüz aşı şemasında
  - İlk boğmaca dozu 2.ayda
  - 6 aydan önce lisanslı influenza aşısı yok
  - Rotavirus aşısı ise 6-10 hafta öncesi yapılamaz
- Lisanslı olmayan aşılar
  - RSV
  - Grup B streptokok
  - CMV

NEDEN GEBE AŞILAMASI ??

- Gebelik: Sağlıklı bir kadının immün sisteminin en hassas olduğu dönemdir (Minor hücresel immünite yetersizliği, dolaşan IgG azalması..)
- İnfluenza mortalitesi ve komplikasyonları gebelikte artar.
- Hasta gebe kadında ilaç kullanımının getirdiği riskler (Ab gibi)

GEBE AŞILAMASI

- Maternal aşılama sadece anneyi değil bebeği de hastalıklardan korur.
- Gebelikte annenin aşıya antikor yanıtı yeterlidir.
- Pasif geçen antikorlar doğum sonrası aşılanana dek bebekte aktivitesini devam ettirir.
- Gebelikte aşılama doğum sonrası temas nedeniyle verilecek Ig preparatlarından daha güvenli ve ucuzdur.

GEBE AŞILAMASI

- Örnek hastalık: Gebeliğin 3.trimesterinde uygulanan Tetanos aşısı ile Yenidoğan Tetanosunun Eliminasyonu

- H1N1 pandemisi sırasında gebe aşılaması ile hem anneler hem de bebekleri influenzadan korundular.

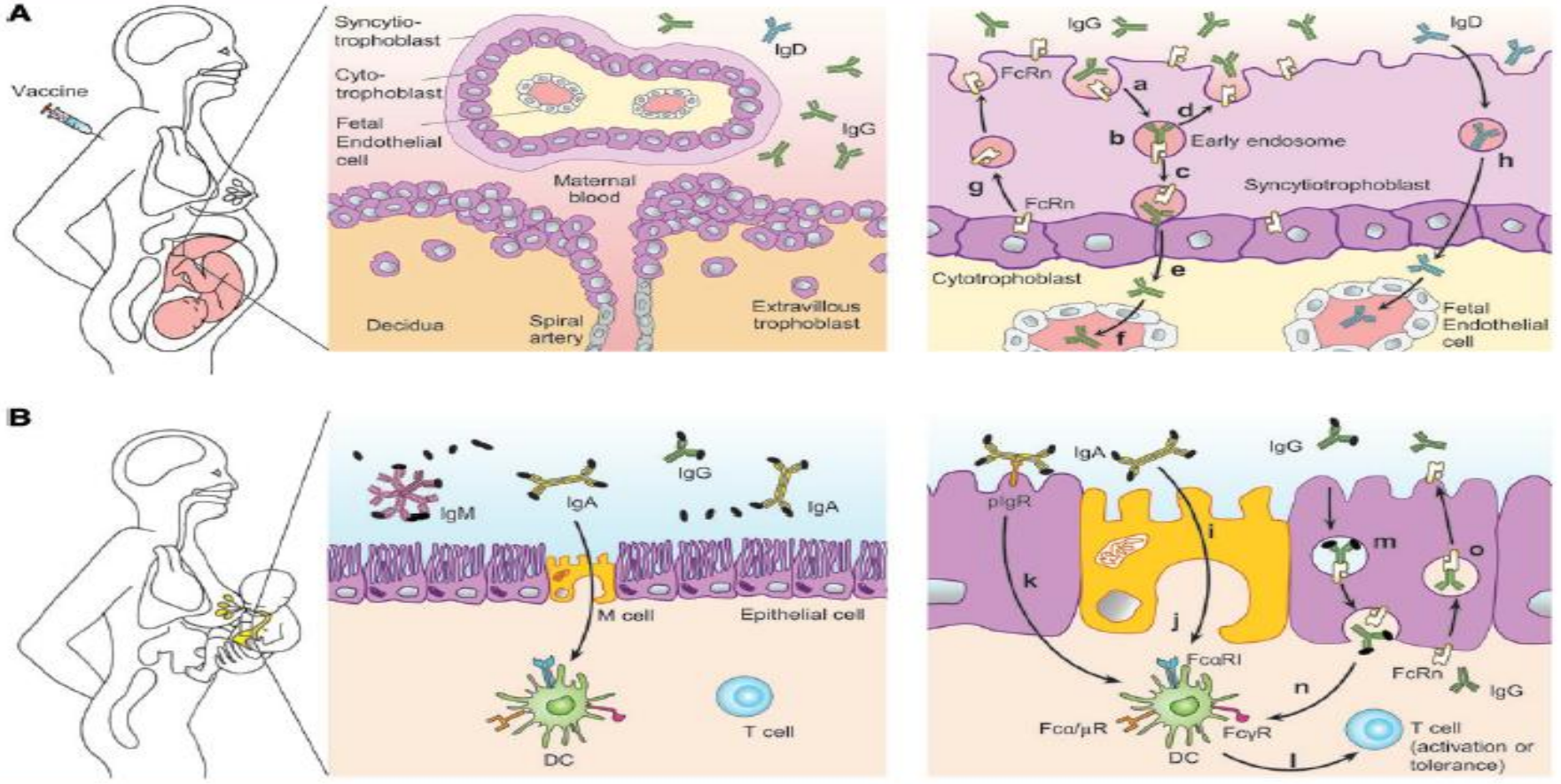


Figure 1 Mechanisms of vaccine-induced maternal, fetal and neonatal immune protection. (**A**) Maternal vaccination induces innate, humoral and cell-mediated immunity that confers direct protection of the mother against infections (left panel). Vaccine-induced maternal IgG is also transferred to the fetus to confer systemic passive immunity (middle and right panels). Maternal IgG is endocytosed into villous syncytiotrophoblasts from the maternal surface (a) and binds to FcRn in the acidic environment of early endosomes (b). IgG-FcRn complexes are then either transcytosed to the fetal side of syncytiotrophoblasts (c) or recycled back to the maternal side (d). IgG dissociates from FcRn upon exposure to the neutral pH environment at the fetal side of syncytiotrophoblasts (e) and enters fetal circulation (f). FcRn on the fetal side of syncytiotrophoblasts can be retrieved back to the maternal side to participate in subsequent IgG transport (g). Maternal vaccine-induced IgD could cross trophoblasts and enter fetal circulation via an unknown mechanism (h). (**B**) Maternal vaccination-induced antibodies, including IgA, IgG, IgM and IgD, are also secreted into colostrum and milk. During breastfeeding, these antibodies are ingested by the neonate (left panel). IgA, IgG and IgM confer neonatal mucosal immune protection by binding to commensal and pathogenic microbes and their virulence factors to mediate immune exclusion and neutralization (middle panel). In addition, maternal IgA facilitates antigen sampling in the neonatal intestinal mucosa by crossing M cells via an unknown receptor (i) or apical-to-basolateral retro-transcytosis via polymeric Ig receptor (pIgR) (k). Besides delivering antigens to mucosal dendritic cells (DCs), IgA can interact with DCs via FcαRI, leading to either immunity against pathogenic microbes or tolerance to commensal microbes (l). IgA can also interact with Fcα/μR on DCs to mediate immune tolerance. Ingested maternal IgG can also cross epithelial cells via FcRn (m) through a mechanism similar to that in syncytiotrophoblasts. This pathway delivers antigens to, and regulates, DCs via activating or inhibitory FcγRs (n). Maternal IgG acquired during the perinatal period can be re-secreted by FcRn into the lumen to participate in mucosal immune defense (o).

Transplasental Antikor Geçişi-1

Transplasental IgG geçişi

- Aktif, selektif, intraselüler bir olaydır.
- Gestasyon yaşı ile artış gösterir.
  - 17.haftada başlar
  - 33.haftada maternal ve fetal IgG eşitlenir.
  - 40.haftada fetal IgG > maternal IgG (Bazı antikorlar için)

1. Esposito S, Bosis S, Morlacchi L, Baggi E, Sabatini C, Principi N. Can infants be protected by means of maternal vaccination? Clinical Microbiology and Infection. 2012;18(Suppl 5):85-92.
2. van Rie A, Wendelboe AM, Englund JA. Role of maternal pertussis antibodies in infants. Pediatric Infectious Disease Journal The Global Pertussis Initiative. 2005 May;24(5):S62-5.

Transplasental Antikor Geçişi-2

- Fetal IgG'yi etkileyen faktörler
  - Maternal kandaki IgG düzeyi
  - Aşı tipi
  - Aşılama ile doğum arasında geçen süre
  - Doğumdaki gestasyonel yaş

- Yenidoğandaki transplasental antikorlar
  - Yaşamın ilk aylarında aşıyla korunabilen hastalık sıklığını azaltır.

Gebe Aşılamasının Güvenilirliği

İn utero aşı ile temas sonrası olabilecekler

- Teratojenite, büyüme ve gelişme geriliğine neden olma, fetusun viabilitesini etkileme. Bunların çoğunun genel popülasyondaki oranları da yüksek
  - Spontan abortus (%10.4-22.4)
  - Preterm doğum (%11.9)
  - Düşük doğum ağrılığı (SGA) (%8-16)
  - Doğumsal anomali (%3)

İnaktif virus, bakteri ve toksoid aşılar sonrası bu oranlarda artış olmaz

FDA Gebelikte Risk Sınıflaması

Category	Description
A	**Controlled studies show no risk**-Adequate, well-controlled studies i… monstrate a risk to
B	…ontrolled …l risk of fetal …, In the …ies show no fetal …t remains a possibility.
C	…-Adequate, well-controlled human studies are lacki… and animal studies have shown a risk to the fetus or are lack… as well. *There is a chance of fetal harm if the drug is administered during pregnancy; but the potential benefits may outweigh the potential risk.*
X	**Contraindicated in Pregnancy**-Studies in animals or humans, or investigational or post-marketing reports, have demonstrated positive evidence of fetal abnormalities or risk which clearly outweighs any possible benefit to the patient.

Aşıların büyük kısmı gebelik riski açısından B veya C kategorisinde yer almaktadır

FDA Gebelikte Risk Sınıflaması

Category	Description
A	**Controlled studies show no risk**-Adequate, well-controlled studies i… monstrate a risk to
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Kategori B ve C'de olan bir aşı risk durumunda veya zorunluluk halinde uygulanabilir

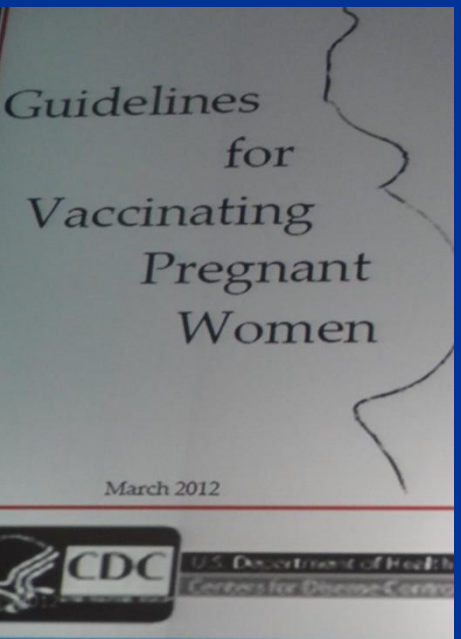
Maternal İmmünizasyonla İlgili

- ABD'de 1957'den beri (Tetanos, IPV)
- Dünya geneli 1970 (Tetanos)
- Klinik Çalışmalar (1988)

Study					
Lichty					ported
Cohen/ Mishulow	194[illegible] 1946			gnancy [illegible]mes	[illegible] immunized and 3/6 unimmunized exposed infants developed pertussis
Kendrick	1945	57	3 wP	[illegible] reported	Not reported
Adams	1947	16	3 wP	Not reported	Not reported
Cohen	1951	106	3 wP	Mild injection site; no adverse pregnancy outcomes	0/2 exposured infants of immunized women developed pertussis

GEBE AŞILAMASI-Rehberler

- İnaktif virus veya inaktif bakteri ve toksoid aşıları ile gebeleri aşılamak fetus için risk oluşturmamaktadır.



CDC Mart 2012

GEBE AŞILAMASI-Rehberler

- Gebe kadını aşılamakla alınan riskler aşısı yapılan hastalıkla temas riski yüksek ise,
- O enfeksiyonu geçirmek fetus ve/veya gebe kadın için sorunlara neden olacaksa ve
- Uygulanacak aşı zararsızsa önemsenmeyecek düzeydedir.

CDC Mart 2012

Hangi Aşılar?

- Tüm inaktif ve subunit aşıları

Ancak Hastalık riski de önemlidir

- İnfluenza
- Hepatit B
- Boğmaca
- Tetanos

Odaklanma genelde DaBT ve İnfluenza üzerinedir.

Rutin Önerilen Aşılar

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 62 / No. 7
February 22, 2013

Aşı	Gebeler için Öneriler
Hepatit A	Önerilir
Hepatit B	Önerilir
Human papillomavirus	Önerilmez
İnaktif İnfluenza Aşısı	Önerilir
Canlı İnfluenza Aşısı	Kontrendike
KKK	Kontrendike
MCV4	Öneri için yeterli veri yok
PCV13	Öneri için yeterli veri yok
PPSV23	Öneri için yeterli veri yok
Polio	Gerekli ise yapılabilir
Td	Uygulanması gerekir
daBT	Uygulanması gerekir
Suçiçeği	Kontrendike
Zoster	Kontrendike

En Güzel Örnek: Tetanos Aşılaması

- Neonatal Tetanos Önemli bir mortalite nedeniydi.
- 1960'larda Tayland'da YD ölümlerinin %38'i
- 1980'lerde gelişmekte olan ülkelerde 1 yaş altı ölümlerin %30'u tetanosa bağlı
- 1989 WHO neonatal tetanosu maternal aşılama ile önleme kararı aldı.

Schofield et al, Brit Med J 1961,2: 785-9

BRITISH MEDICAL JOURNAL 785

NEONATAL TETANUS IN NEW GUINEA

EFFECT OF ACTIVE IMMUNIZATION IN PREGNANCY

BY

F. D. SCHOFIELD, M.D., M.R.C.P., D.T.M.&H.

V. M. TUCKER, S.R.N.

Department of Public Health, Territory of Papua and New Guinea

AND

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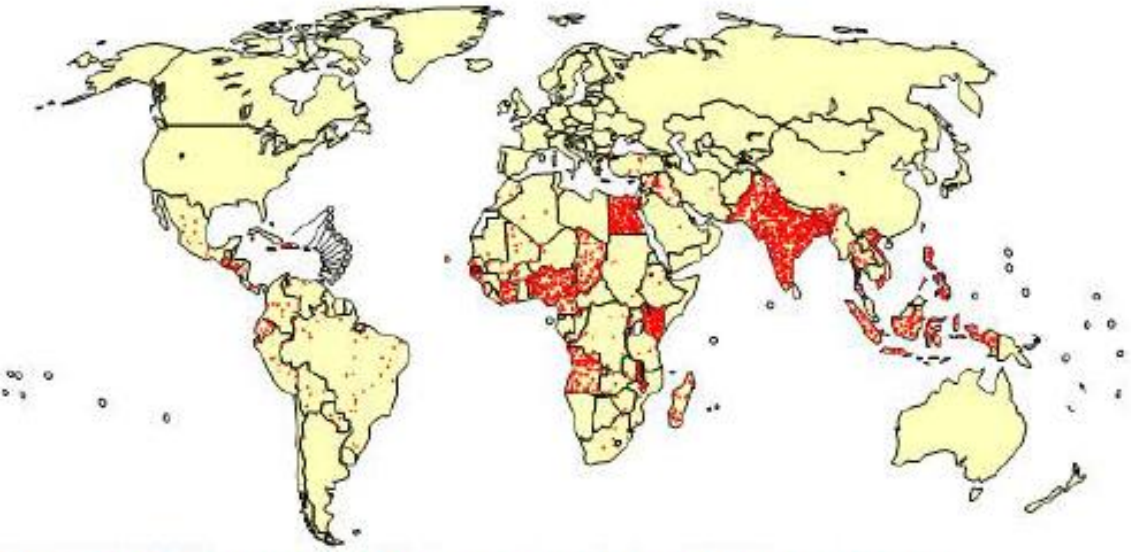
A.O.G. Mission, Wingei, Sepik District, New Guinea

New Guinea, 1961: Incidence of neonatal tetanus pre-study was 80 cases per 1000 live births

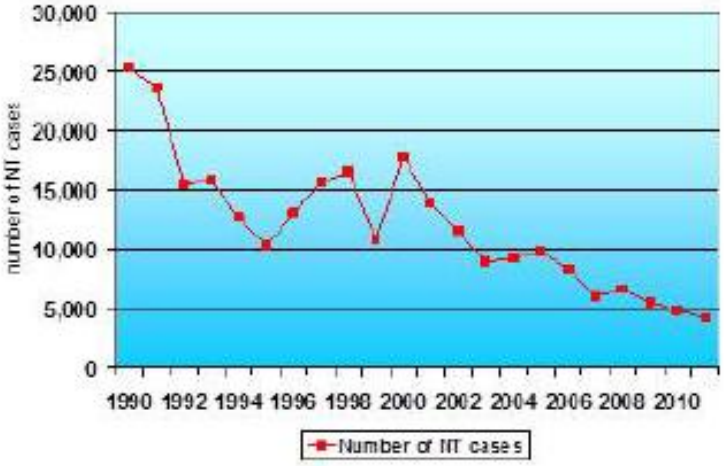
# Doses Tetanus Toxoid Given To Pregnant Women	0 or 1 dose	2 doses	3 doses
Number (%) of infants with neonatal tetanus	16/160 (10%)	8/234 (3.4%)	1/175 (0.6%)

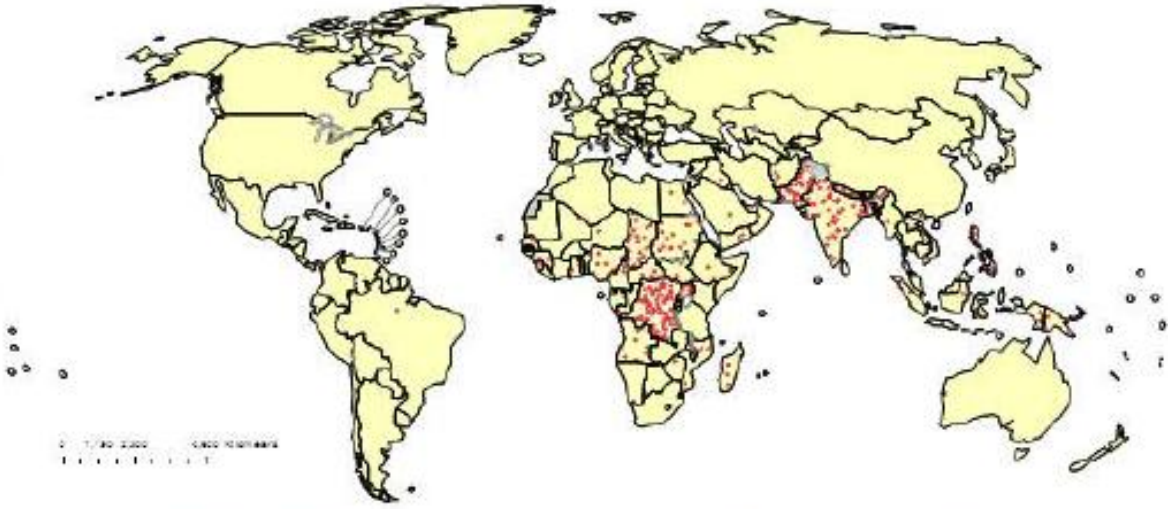
Reported Neonatal Tetantus Cases, 1990-2011



1 dot= 10 NT cases

1990: 25,293 reported NT cases (no data for 39 countries)





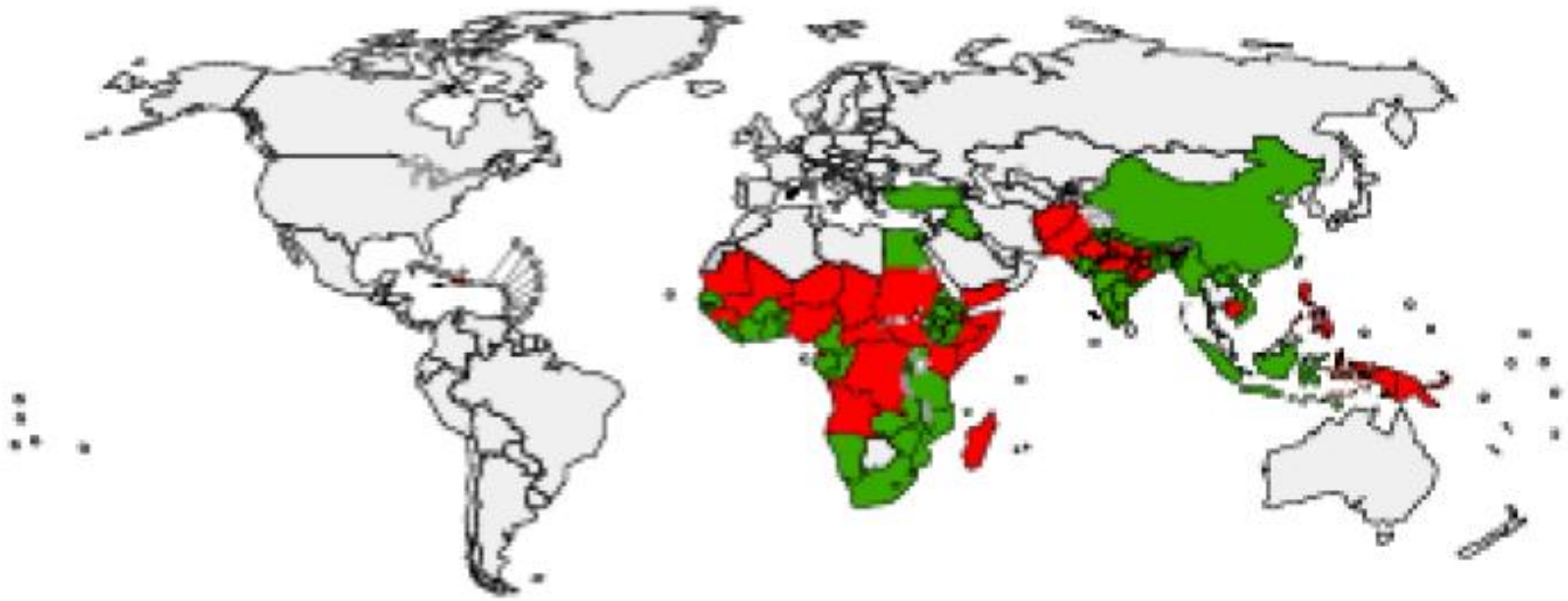
2011: 4213 reported NT cases (no data for 26 countries)

Source: WHO/IVB database, 2012

194 WHO Member States. Data as of August 2012

34 Countries eliminated MNT between 2000 & 2013

*(Plus 18 States out of 35 in India, Ethiopia all except Somali region and 29 provinces out of 33 in Indonesia) leaving 25 countries yet to eliminate MNT



Data Source: WHO/UNICEF database, May 2014

194 WHO Member States

Map production: Immunization Vaccines and Biologicals, (IVB), World Health Organization

Date of Slide : 12 May 2014

- MNT eliminated prior to 2000
- MNT eliminated since 2000
- MNT not eliminated
- Not applicable

unicef

World Health Organization

Maternal İnfluenzanın Riskleri

- Gebe kadınlar influenza açısından yüksek mortalite ve morbidite gösterirler.
- Gebelikte komplikasyon riski yüksek
  - Pnömoni
  - Uzun süreli hospitalizasyon (X 18)
  - Doğum komplikasyonları
    - Preterm doğum (X4 kat)
    - Fetal distress (X 2.5 kat)
    - Seksio (X4 kat)
  - Ölüm
- Risk gestasyonel hafta arttıkça artıyor.

2009 H1N1 Pandemisinin Gebelere Etkisi

MATERNAL Risk Factor	RR Hospital-ization	RR Death
Gender	1.0 (0.8-1.1)	0.8 (0.7–1.0)
Respiratory Disease	3.3 (2.0–5.8)	7.8 (4.9–26.6)
Asthma	1.8 (1.2–2.6)	1.7 (1.5–2.1)
Diabetes	0.9 (0.5–1.7)	4.0 (3.1–6.9)
Cardiac Dis.	2.0 (1.5–2.2)	9.2 (5.4–10.7)
Renal Dis.	4.4 (4.2–4.5)	22.7 (21–25.4)
Liver Dis.	3 5.7 (3.2–16)	17.4 (11.6–28)
Neurological Disease	1.1 (0.9–1.3)	13.1 (8.4–32.4)
Immune Compromised	24.3 (16.1–33)	27.7 (14–66.5)
Pregnancy	**6.8 (4.5–12.3)**	**1.9 (0.0–2.6)**

Relative Risk differed by country from 3.5 in Germany to 25.3 in France, and may reflect clinical practice variations and health care utilization

*Van Kerkhove, Mounts PLoS Med 2011

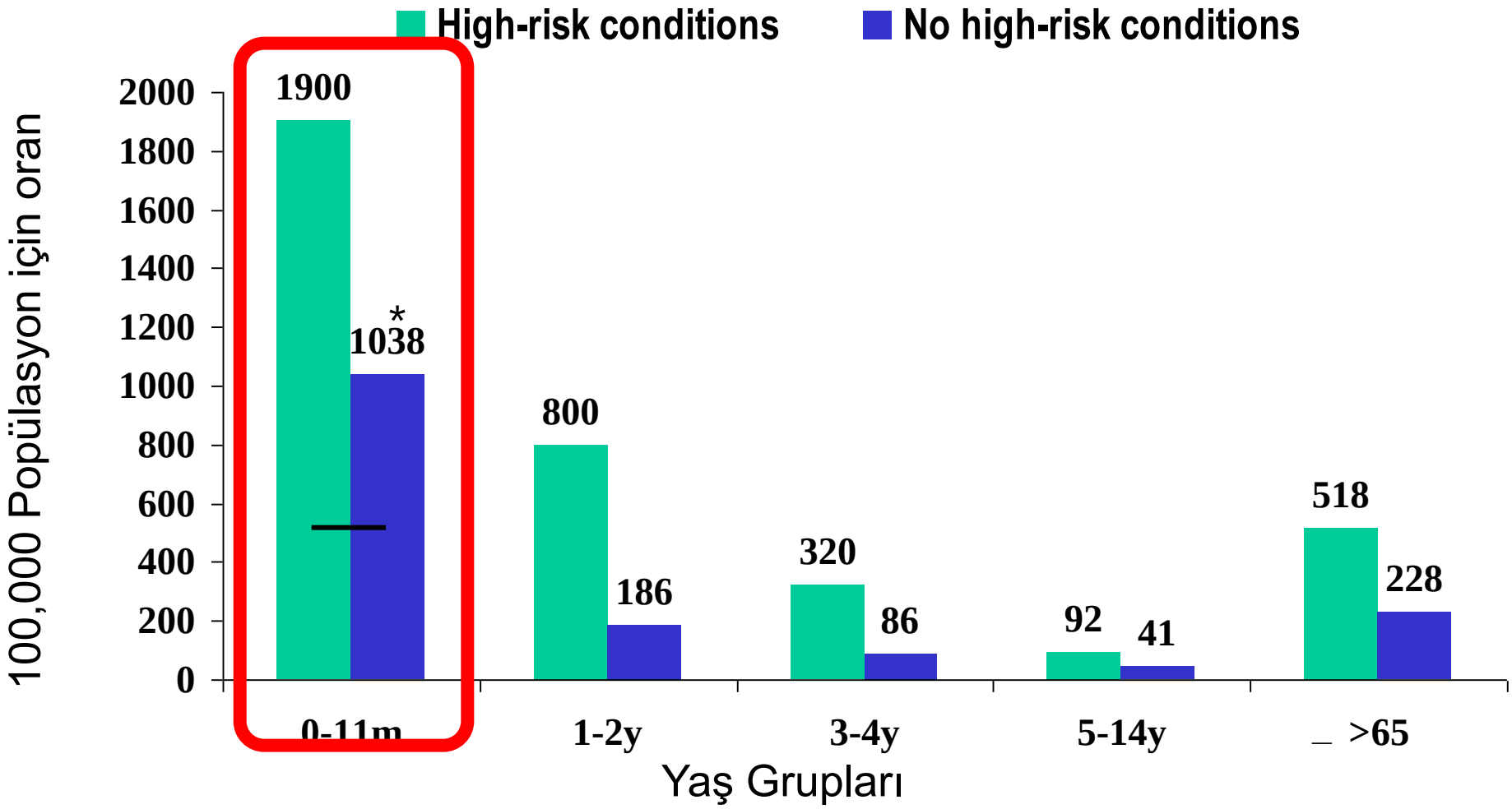
H1N1 Pandemisinin Öğrettikleri

- Gebe kadınlarda influenza sıklığı ve hospitalizasyon gebe olmayanlara göre daha yüksek (%32 vs %8) veya 7.2 kat fazla
- Hepsi önceden sağlıklı kadınlar
- %20 pnömoni
- %9 Yoğun bakım gereksinimi
- Ciddi vakaların çoğu 3.trimesterde (kötü neonatal prognoz %83: YDYBÜ yatışı ve ölüm vb)
- Ölüm %4-5 (komplike pnömoni ve ARDS ile)

Yenidoğan/Sütçocuğunda İnfluenzanın Riskleri

- Yenidoğan
  - Preterm doğum (X4 kat)
  - Düşük doğum ağırlığı
  - Teratojenik etkisi yok ?
- Sütçocuğu < 6 ay
  - <23 ay çocuklarda influenza komplikasyonları sıktır
  - Bu yaş grubunda lisanslı influenza aşısı yok

İnfluenza'ya Bağlı Hastaneye yatış Oranları (ABD)



* 0-5 ay: 1,038/10^6; 6-11 ay 496/10^6.

CDC MMWR 2003;52(RR-8):1-34

2009 H1N1 Pandemisinin Bebeklere Etkisi

Study	Site	Case	Control	Results
McNeill AJOG 2011	Canada 1990-2002	Maternal flu season respiratory hospitalization (N=208)	No hospit-alization (N=132,099)	Newborns of hosp. women: 90 gm smaller, 40% more likely SGA
Mendez-Figueroa AJOG 2011	USA 2009-10	Maternal ILI with lab confirmed pandemic H1N1 (N=15)	Maternal ILI with neg. lab test (N=25)	Newborns exposed to flu were 285 gm smaller
Pierce BMJ 2011	UK 2009-10	Pregnant women with lab+ confirmed pandemic H1N1 (N=256)	Historical comparison of pregnant women from 2005-2006 (N=1220)	Newborns exposed to flu were 255 gm smaller, with incr. perinatal mortality and premature birth

İnfluenza Aşısının Maternal Yararları

- Gebe kadınlarda aşı etkinliği ve immünojenisite konusunda az sayıda veri var.
  - Serokonversiyon: Aynı yaş grubundaki gebe olmayan kadınlardan çok az düşük veya eşdeğer
  - Akut/febril solunum yolu hastalığı: Aynı sezonda aşılanan gebe olmayan kadınlarla benzer oranda
  - İstisna: Banglades'teki bir çalışmada: Akut ateşli solunum yolu hast. Aşılı gebe kadınlarda aşılı olmayanlara göre %36 azalma

İnfluenza Aşısının Neonatal Yararları

- Preterm doğum ve düşük doğum ağırlıklı bebek oranında azalma.
- Bebeklerde hastalanma oranlarında aylar süren belirgin azalma.
- < 12 ay bebeklere Akut otitis media ve tıbbi müdahale gerektiren solunum yolu hastalığında anlamlı azalma.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Risk of Fetal Death after Pandemic Influenza Virus Infection or Vaccination

Siri E. Håberg, M.D., Ph.D., Lill Trogstad, M.D., Ph.D., Nina Gunnes, Ph.D., Allen J. Wilcox, M.D., Ph.D., Håkon K. Gjessing, Ph.D., Sven Ove Samuelsen, Ph.D., Anders Skrondal, Ph.D., Inger Cappelen, Ph.D., Anders Engeland, Ph.D., Preben Aavitsland, M.D., Steinar Madsen, M.D., Ingel

Haberg et al. NEJM
Jan. 17, 2013; 368: 333-40

There were 117,347 eligible pregnancies in Norway from 2009 through 2010. Fetal mortality was 4.9 deaths per 1000 births. During the pandemic, 54% of pregnant women in their second or third trimester were vaccinated. Vaccination during pregnancy substantially reduced the risk of an influenza diagnosis (adjusted hazard ratio, 0.30; 95% confidence interval [CI], 0.25 to 0.34). Among pregnant women with a clinical diagnosis of influenza, the risk of fetal death was increased (adjusted hazard ratio, 1.91; 95% CI, 1.07 to 3.41). The risk of fetal death was reduced with vaccination during pregnancy, although this reduction was not significant (adjusted hazard ratio, 0.88; 95% CI, 0.66 to 1.17).

Table 2. Hazard Ratios for Fetal Death, According to Status Regarding Vaccination, Pregnancy during the Pandemic Wave, and a Clinical Diagnosis of Influenza.*

Variable	No. of Pregnancy-Days at Risk†	Hazard Ratio (95% CI)		
		Without Adjustment	With Initial Adjustment‡	With Further Adjustment§
Total no. of days	18,970,404			
Vaccinated during pregnancy				
No	15,942,252	1.00	1.00	1.00
Yes	3,028,152	0.95 (0.74–1.21)	0.84 (0.64–1.10)	0.88 (0.66–1.17)
Pregnant during the pandemic				
No	10,422,035	1.00	1.00	1.00
Yes	8,548,369	1.15 (0.96–1.37)	1.21 (1.00–1.48)	1.26 (1.02–1.55)
Without an influenza diagnosis	8,221,514	1.11 (0.93–1.33)	1.18 (0.96–1.44)	1.23 (0.99–1.52)
With an influenza diagnosis	326,855	2.00 (1.20–3.32)	2.10 (1.27–3.49)	1.91 (1.07–3.41)

Maternal Immunization with Influenza Vaccine Protects Mothers and Babies Against Influenza*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Laboratuvar tanılı hasta %63 azalma

Solunumsal hastalıkta %29 azalm

Annelerde ateşli hastalıkta %36 azalma

Babies born to mothers who received TIV

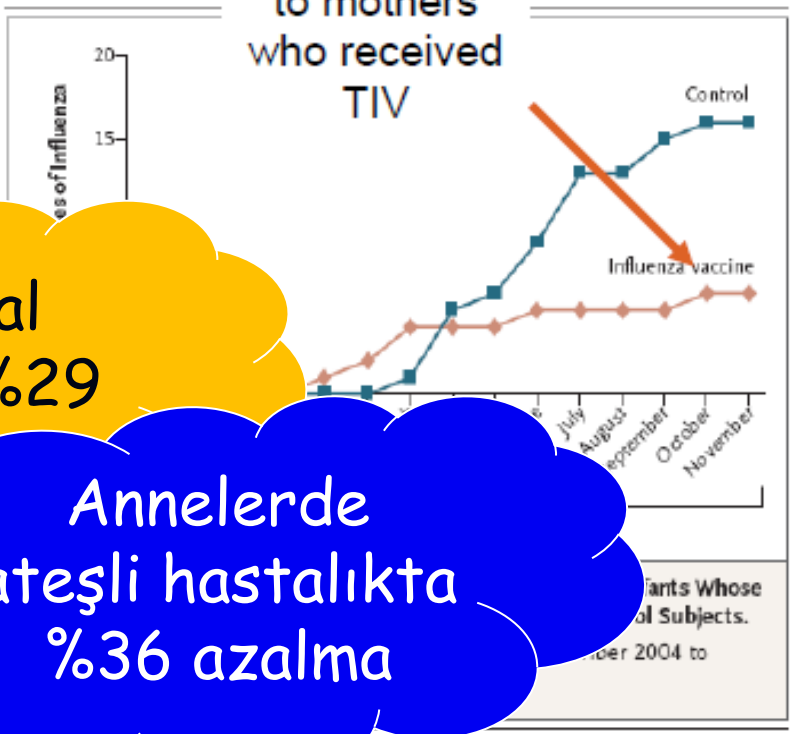
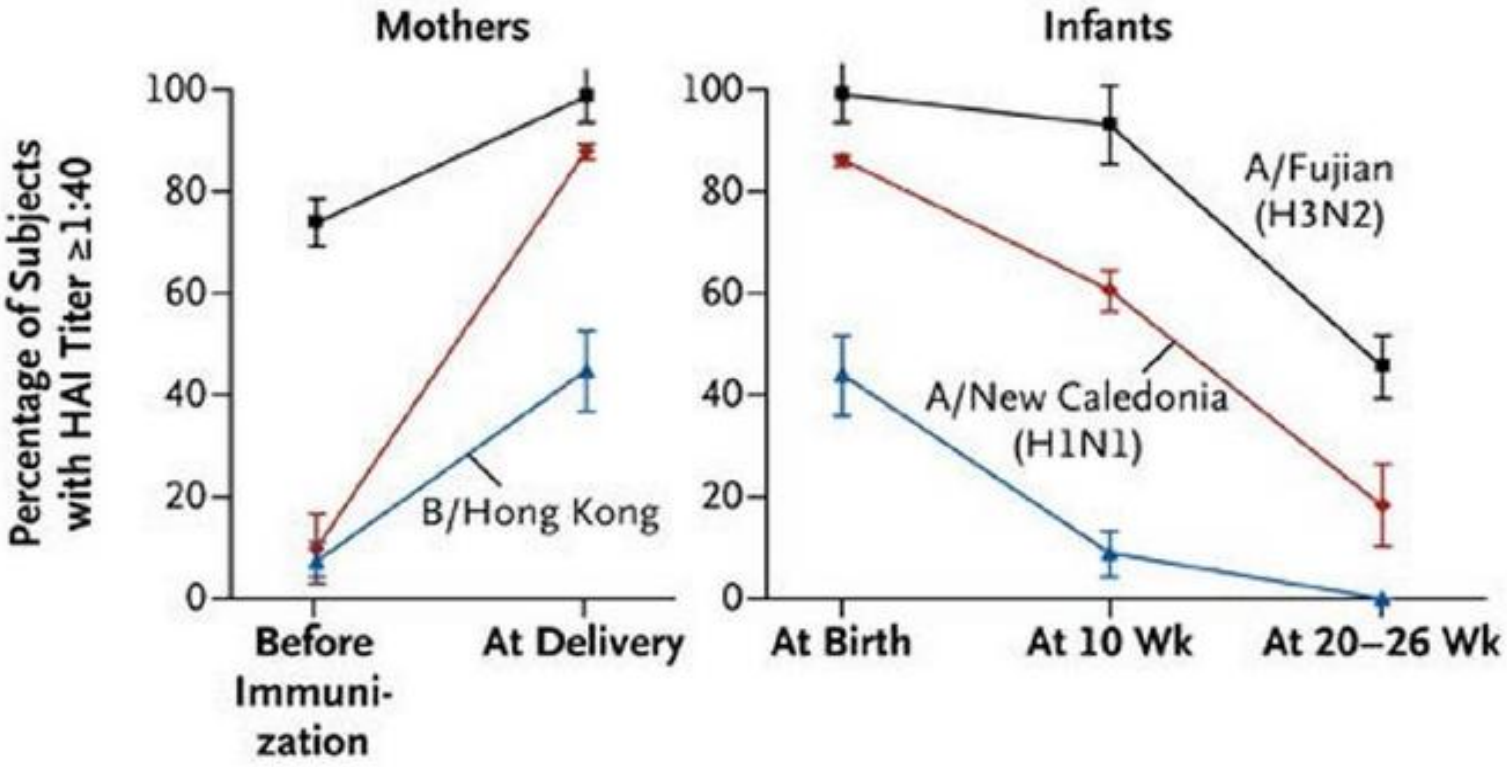


Table 2. Clinical Effectiveness of Influenza Vaccine in Infants and Mothers.*

Variable	Episodes		Clinical Effectiveness (95% CI)†	Risk Di… (95%…
	Control	Influenza Vaccine		
	no.		%	
Mothers				
Person-months	1076	1089		
Respiratory illness with fever				
Any fever	77	50	35.8 (3.7 to 57.2)	−14.2 (−25.5 to −2.9)‖
Temperature >38°C	33	19	43.1 (−9.0 to 70.3)	−7.3 (−14.5 to −0.1)‖
Diarrheal disease	60	49	19.3 (−24.6 to 47.8)	−5.9 (−16.4 to 4.5)
Clinic visit	25	19	24.9 (−43.9 to 60.8)	−3.2 (−9.8 to 3.4)

*Zaman et al, NEJM 2008;359

Influenza-specific Antibody After Maternal Immunization in Mothers and Babies*



*Steinhoff et al. N Engl J Med Vol. 362, No. 17, p. 1644, April 29, 2010

Safety of influenza vaccines in pregnancy

- Data available includes
  - Prospective clinical trials *
  - Retrospective and database studies*
  - Post-marketing passive reporting systems **
    - VAERS or VSD in the US
    - Yellow Card System in the UK
  - Other vaccine safety systems using databases that link vaccination history and medical outcomes
  - Post-marketing Pregnancy Registries**
- Data available supports safety of vaccination of pregnant women with inactivated influenza vaccine, with potential to benefit both mother and infant.
  (Maternal Influenza Immunization Convening London, June 2011)

* Limitations: Design and statistical power (N)

** Limitations: 1. Under reporting; 2. In addition to number of events, calculation of a rate or attributable risk (using # persons vaccinated as denominator) is necessary to evaluate relationship/causality; 3. Confounders; 4. Insufficient power

Prospektif İnfluenza Güvenilirlik Çalışmaları

Heinonen et al., 1973[27]

- 1959 through 1965
- n=2,291 influenza vaccine (650 in first 4 months gestation)
- Children followed up for 7 years

Eick et al., 2011[5]

- 2002 through 2005
- n=1,169 influenza vaccine

Retrospektif İnfluenza Güvenilirlik Çalışmaları

France et al., 1995[28]

- 2002 through 2005
- n=3,160 vaccinated vs. 37,969 not vaccinated

Black et al., 2004[17]

- 1997 through 2002
- n= 3,719 vaccinated vs. 45,866 not vaccinated

Pool & Iskander, 2006[29]

- VAERS review 2000 through 2003
- Estimated 2 million doses 26 AEFI reports

Moro et al., 2010[30]

- VAERS review 1990 through 2009
- Estimated 11.8 million doses 148 AEFI reports

İlk Trimester İnfluenza Güvenilirlik Çalışmaları

Sheffield et al., 2012[31]

- n=10,225 (439 first trimester)
- No increase in major malformation rates
- Decrease in overall stillbirth rate

World Health Organization

Organisation mondiale de la Santé

SAGE recommended pregnant women as the most important risk group for inactivated seasonal influenza vaccination. Other risk groups to be considered, in no specific priority order were: health-care workers, children aged 6–59 months, the elderly and those with high-risk conditions. SAGE recommended that countries with existing influenza vaccination programmes targeting any of these groups should continue to do so and should incorporate immunization of pregnant women into such programmes. Countries should decide which other risk groups to prioritize for vaccination based on burden of disease, cost-effectiveness, feasibility and other appropriate considerations.

The priority accorded to pregnant women was based on compelling evidence of substantial risk of severe disease in this group and evidence that seasonal influenza vaccine is safe and effective in preventing disease in pregnant women as well as their young infants, in whom disease burden is also high. Additional considerations for targeting this group included operational feasibility and the opportunity to prioritize and strengthen maternal immunization programmes.

Weekly epidemiological record
Relevé épidémiologique hebdomadaire

May 2012

25 MAY 2012, 87th YEAR / 25 MAI 2012, 87e ANNÉE
No. 21, 2012, 87, 201–216
http://www.who.int/wer

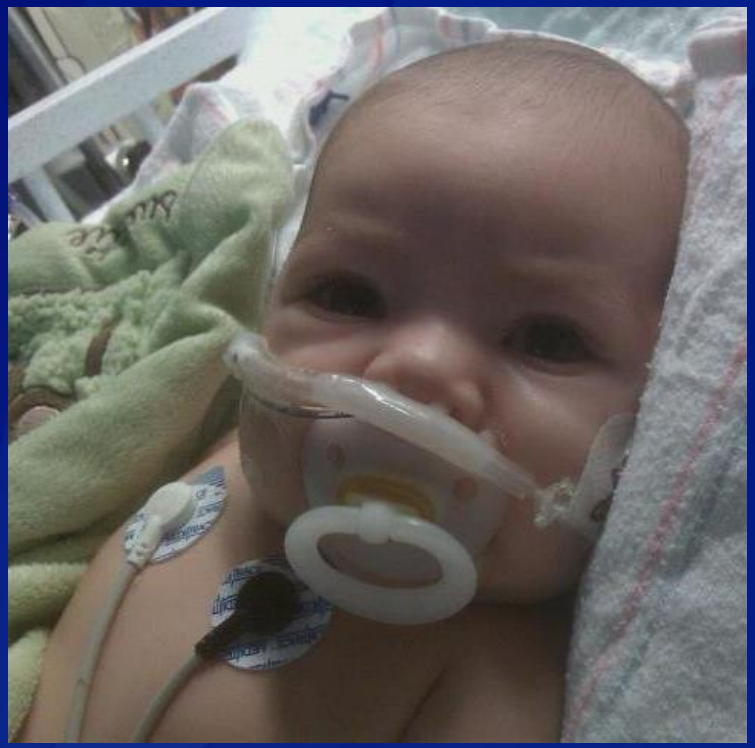
- Pregnant women represent the most important risk group for receipt of inactivated seasonal influenza vaccine.
- The priority accord to pregnant women was based on "compelling evidence of substantial risk of severe disease in this group and evidence that seasonal influenza vaccine is safe and effective in preventing disease in pregnant women as well as their young infants, in whom disease burden is also high."
- No recommendation for timing of influenza vaccine during pregnancy.
- Revision of WHO Position Paper and Grade Tables published in Nov. 2012.

BOĞMACA SORUNU

Weekend Gold Coast Bulletin -
Saturday, 02 April 2011

BOĞMACA aramızda

Bebeklerde Boğmaca Enfeksiyonu



- <6 ay bebeklerde Atipik semptomlar:
  - Kataral evre ve öksürük minimal veya yoktur
  - Apne (Bazen konvülziyonlar)
  - Kusma, inleme, siyanotik ataklar
- ABD 6 aydan küçük bebeklerde:
  - %63 hastaneye yatış
  - %12 pnömoni
  - %1.4 nöbet
  - %0.8 mortalite
  - %0.2 ensefalopati

Ulusal aşı programı-2014

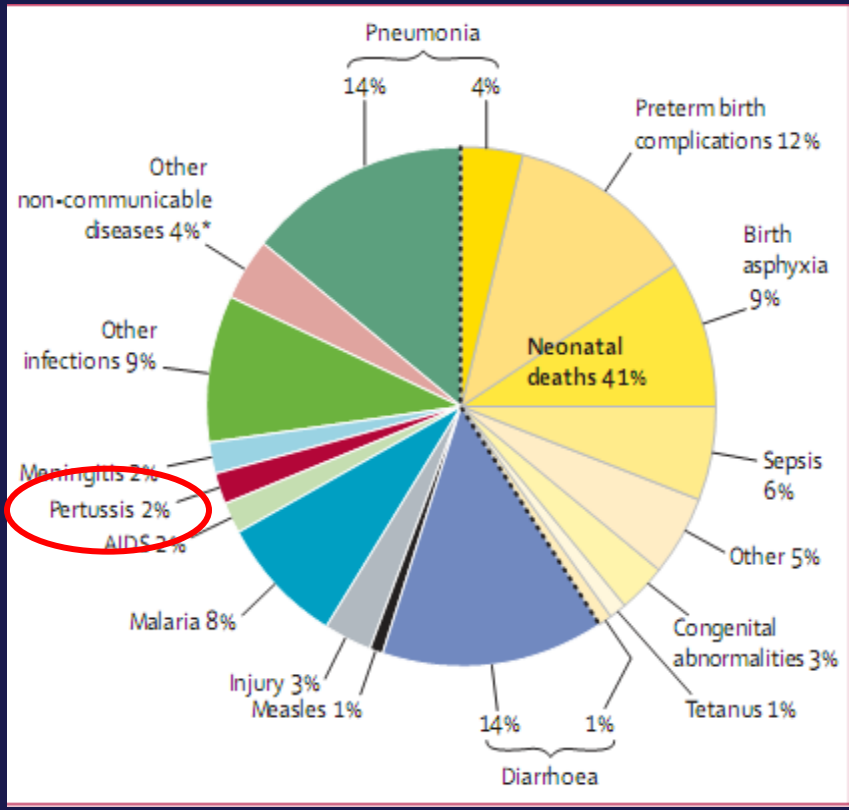
	DOĞUM	1. AYIN SONU	2. AYIN SONU	4. AYIN SONU	6. AYIN SONU	12. AY	18.AY	24 AY	İLKÖĞR. 1.SINIF	İLKÖĞR. 8.SINIF
HEPATİT B	1. Doz	2. Doz			3. Doz					
BCG			1. Doz							
KKK (Kızamık, Kızamıkçık, Kabakulak)						1. Doz			Pekiştirme	
DaBT-IPA-Hib			1. Doz	2. Doz	3. Doz			Pekiştirme		
DaBT-IPA									Pekiştirme	
OPA					√			√	√	
Td										√
Konjuge pnömokok (PCV7)			1. doz	2. doz	3. doz	Pekiş-tirme				
Hepatit A							1. doz	2. doz		
Suçiçeği						1. doz				

Global, regional, and national causes of child mortality in 2008: a systematic analysis

LANCET 12 MAYIS 2010

*Robert E Black, Simon Cousens, Hope L Johnson, Joy E Lawn, Igor Rudan, Diego G Bassani, Prabhat Jha, Harry Campbell, Christa Fischer Walker, Richard Cibulskis, Thomas Eisele, Li Liu, Colin Mathers, for the Child Health Epidemiology Reference Group of WHO and UNICEF**

Children aged 1–59 months	
Diarrhoea‡	1·257 (0·774–1·886)
Pneumonia*	1·189 (0·789–1·415)
Other infections	0·753 (0·479–2·830)
Malaria	0·732 (0·601–0·851)
Other non-communicable diseases	0·228 (0·143–0·606)
Injury	0·279 (0·174–0·738)
AIDS§	0·201 (0·186–0·215)
Pertussis¶	0·195 (·—·)
Meningitis	0·164 (0·110–0·728)
Measles	0·118 (0·075–0·180)
Congenital abnormalities†	0·104 (0·078–0·160)



Her yıl 50 milyon vaka; Bebeklerde ölüm hızı %4

BOĞMACA İLE İLGİLİ YANLIŞ BİLGİLER

Boğmaca yenidoğan bebekler dışında adolesan ve erişkinlerde de sık hastalık etkenidir.

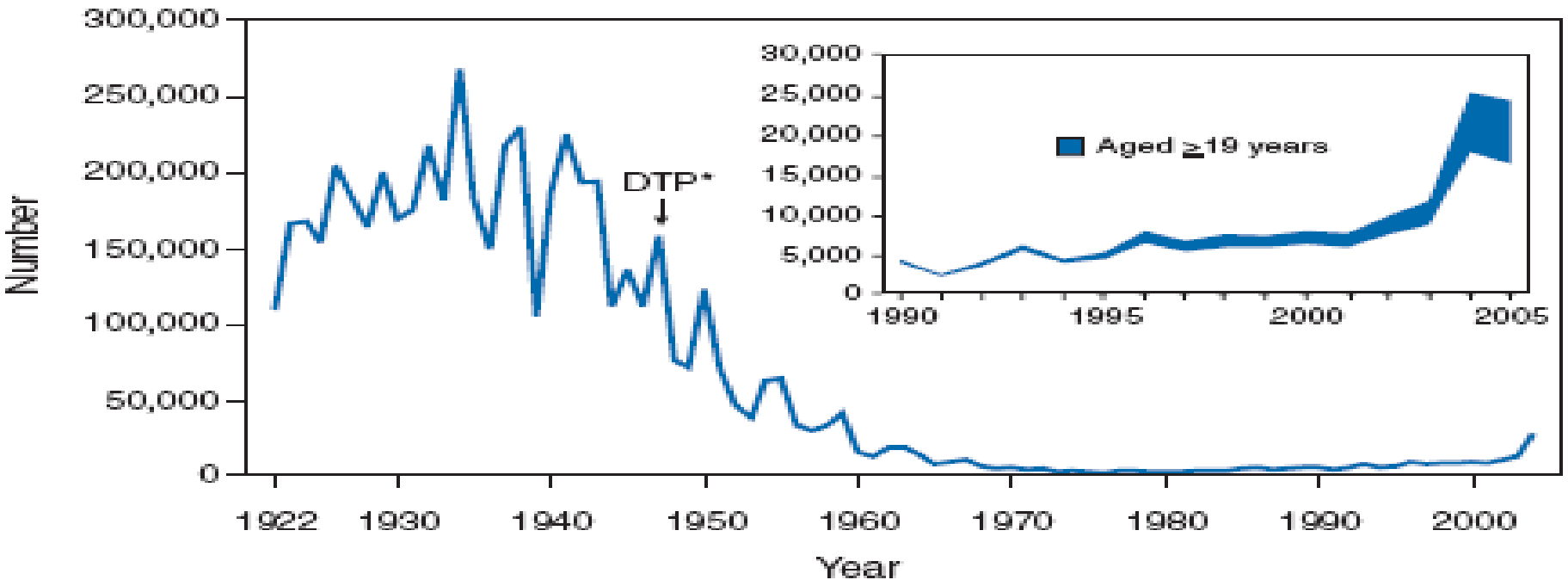
- Boğmaca bir çocukluk çağı hastalığıdır.
- Boğmacaya karşı oluşan doğal immünite ömür boyu devam eder.
- Boğmacaya karşı aşı yanıtı ömür boyu devam eder.

Boğmaca da 2. atak sıklığı yüksektir. Rekürren enfeksiyon primer enfeksiyondan 3-24 yıl sonra görülmektedir.

Boğmacaya karşı hem doğal enfeksiyon yanıtı hem de aşı yanıtı zaman içerisinde azalmaktadır

EPİDEMİYOLOJİ

FIGURE. Number of reported pertussis cases, by year — United States, 1922–2005

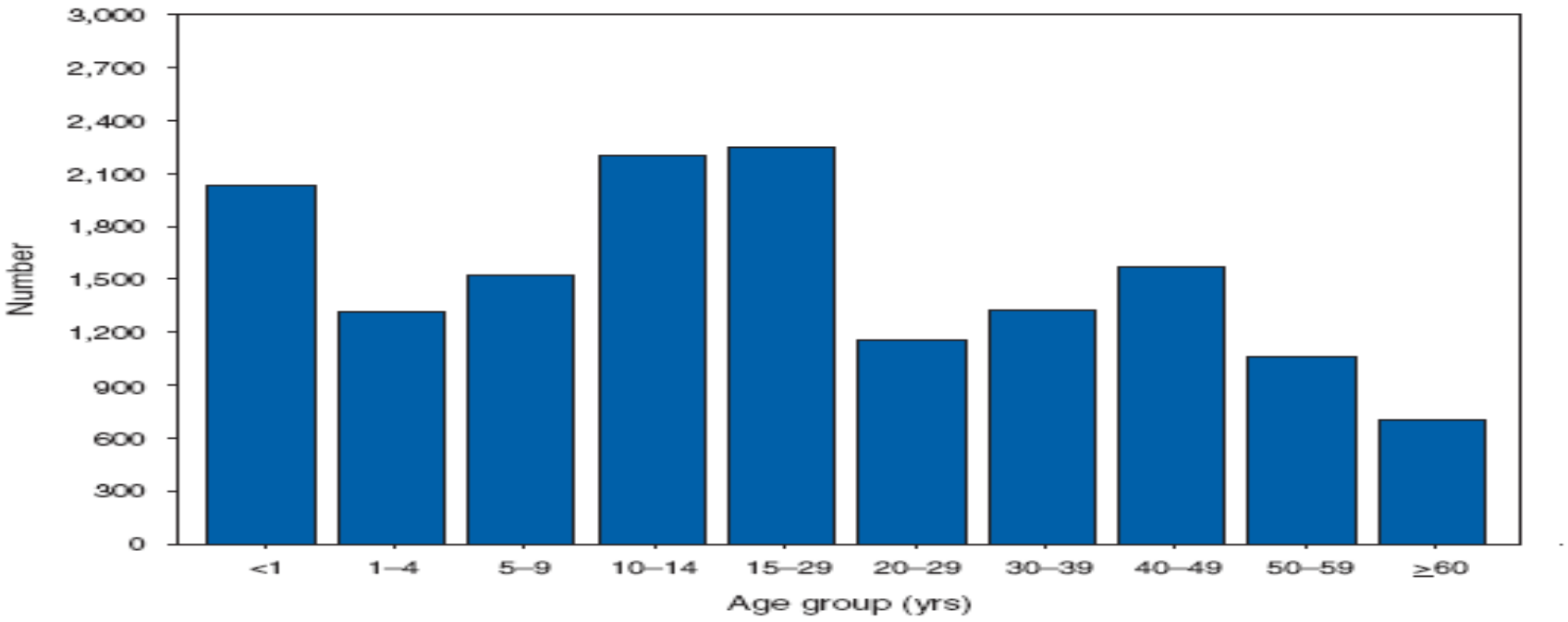


* Introduction of universal pediatric diphtheria and tetanus toxoids and whole-cell pertussis vaccine.

SOURCE: 1950–2005, CDC, National Notifiable Diseases Surveillance System, and 1922–1949, passive reports to the Public Health Service

YAŞ DAĞILIMI-ABD

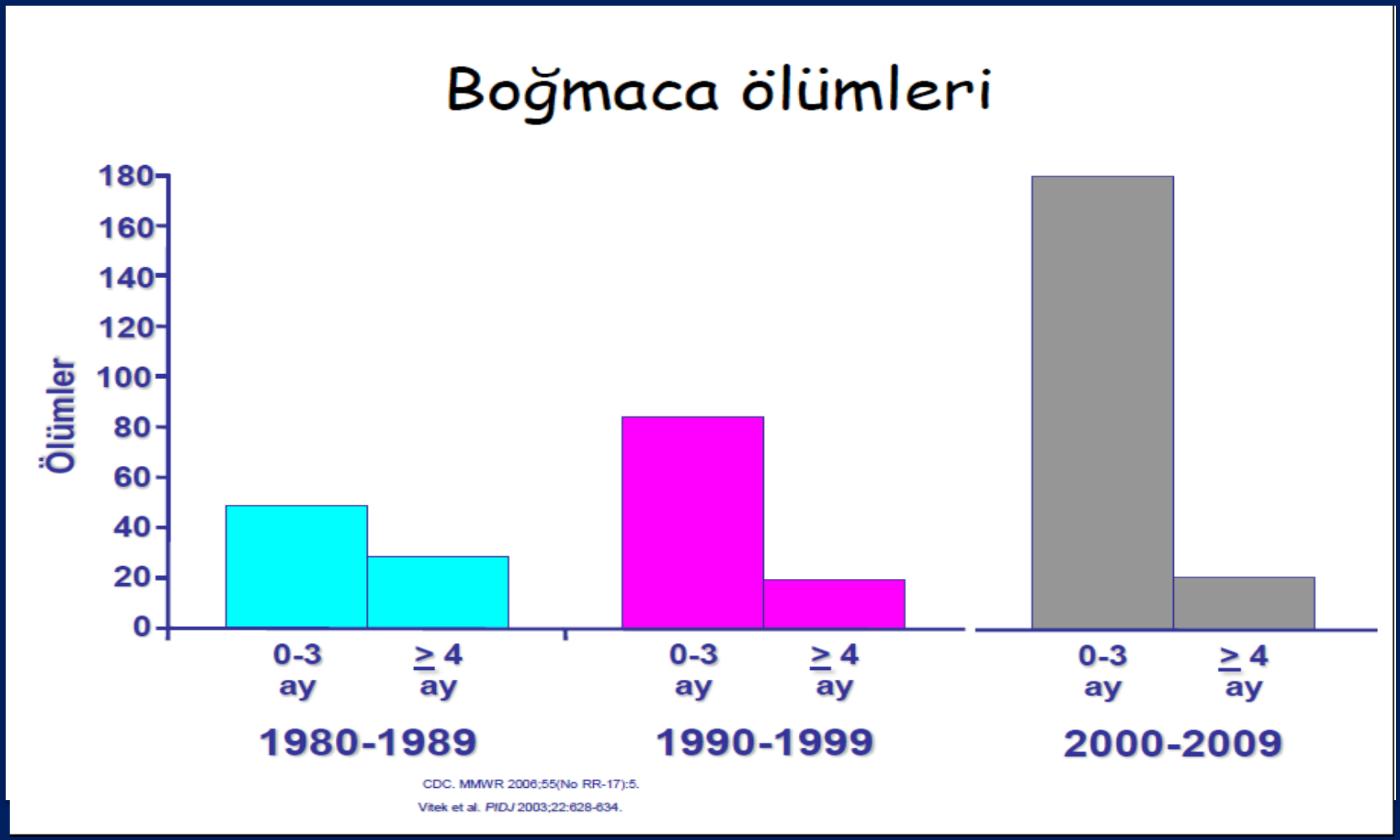
PERTUSSIS. Number of reported cases,* by age group — United States, 2006



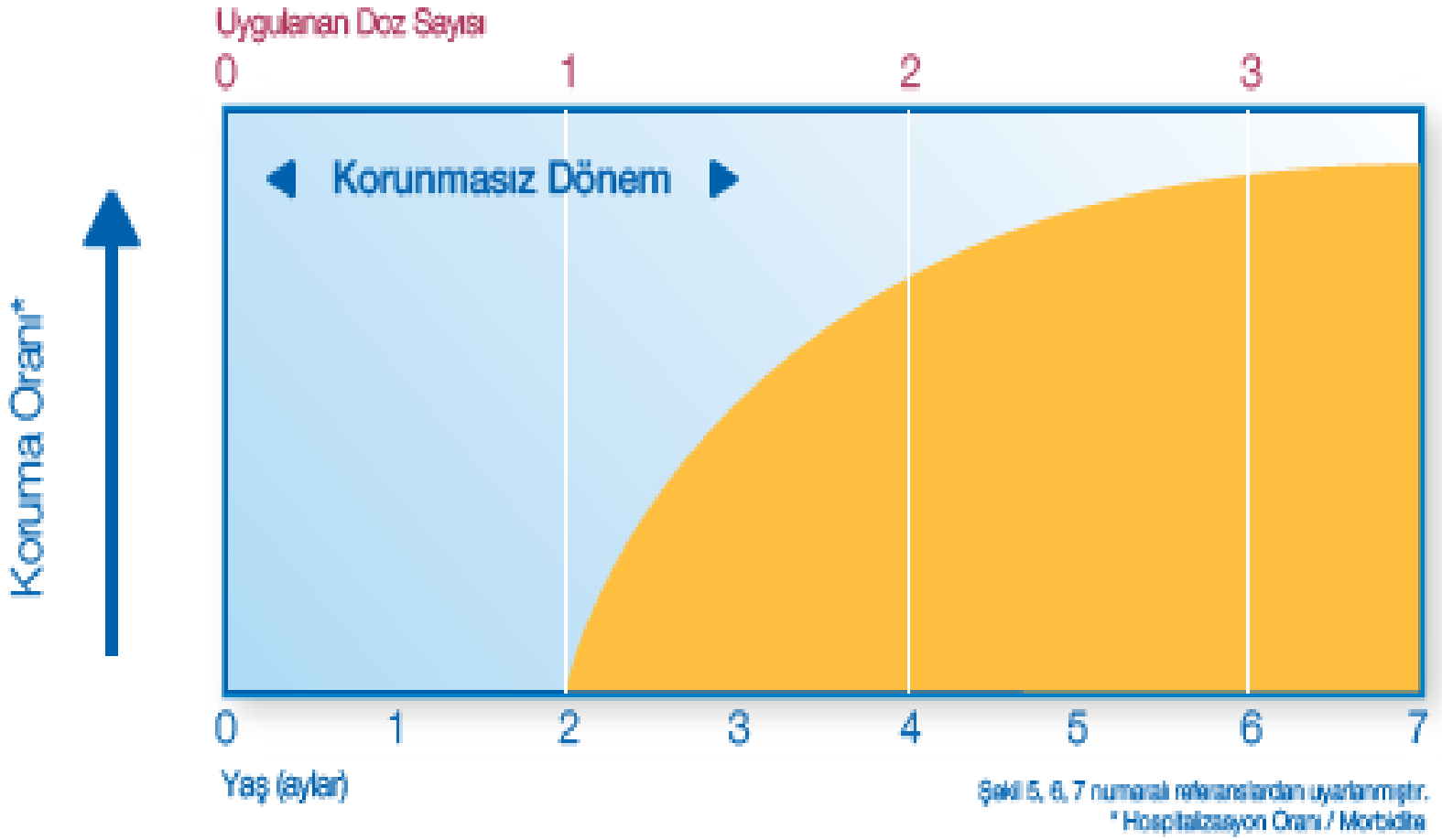
* Of 15,632 cases of pertussis, age was reported as unknown for 503 persons.

Pertussis is an acute, infectious cough illness that remains endemic in the United States despite longstanding routine childhood pertussis vaccination. Immunity to pertussis wanes 5–10 years after completion of childhood vaccination, leaving adolescents and adults susceptible to infection. Infants, especially those who are undervaccinated, are at increased risk for complicated infections and death from pertussis. Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine, adsorbed (Tdap) vaccine is recommended for adolescents and adults, both to reduce the burden of disease in those age groups and to reduce transmission to vulnerable infants.

MORTALİTE

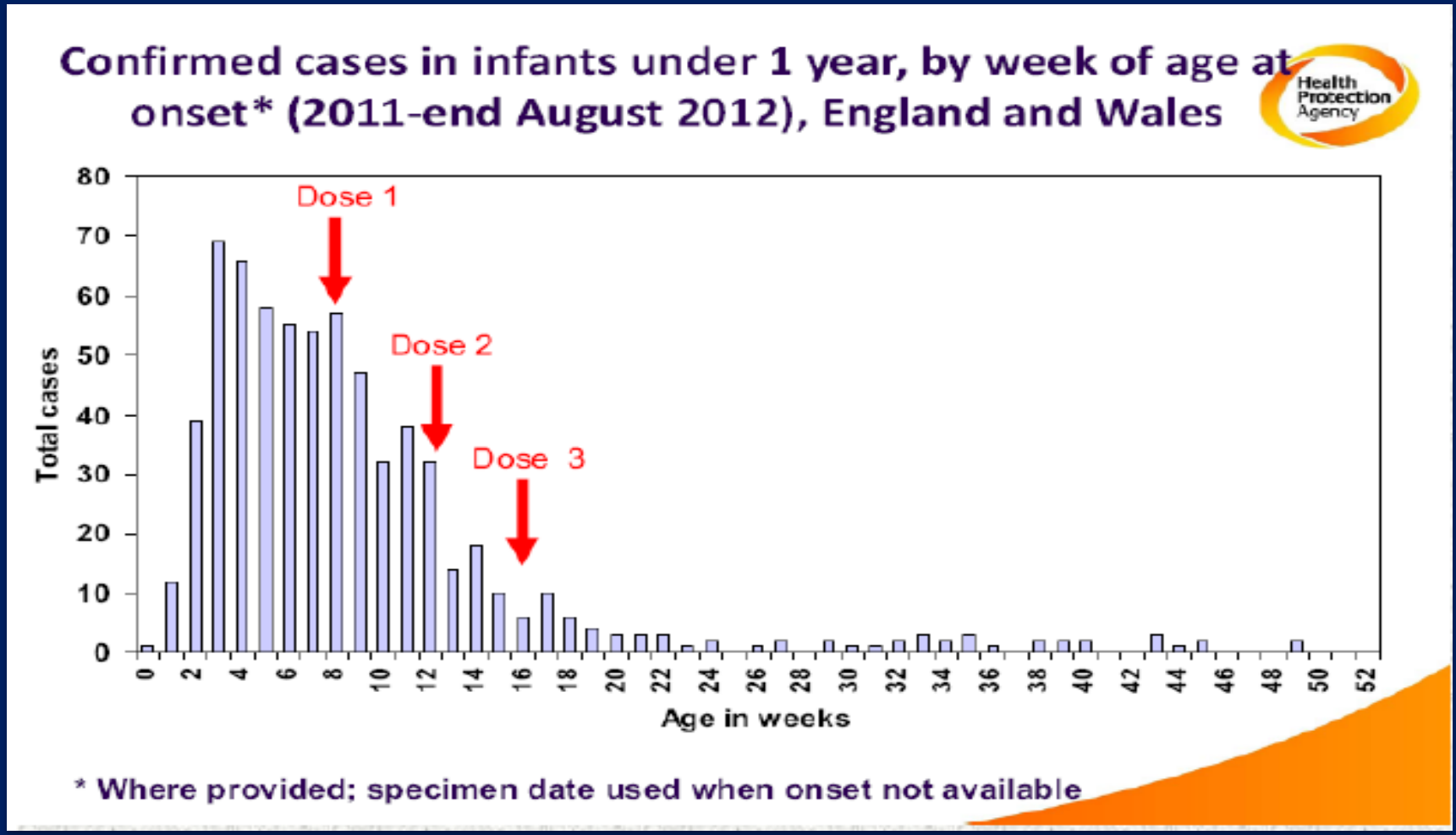

Boğmaca ölümleri
Ölümler
180
160
140
120
100
80
60
40
20
0
0-3 ay
≥ 4 ay
1980-1989
0-3 ay
≥ 4 ay
1990-1999
0-3 ay
≥ 4 ay
2000-2009
CDC. MMWR 2006;55(No RR-17):5.
Vitek et al. PIDJ 2003;22:628-634.

Bebekler primer aşılama (3 doz aşı) tamamlanmadığı için yaşamlarının ilk 7 ayında boğmacaya karşı tam koruma altında değiller

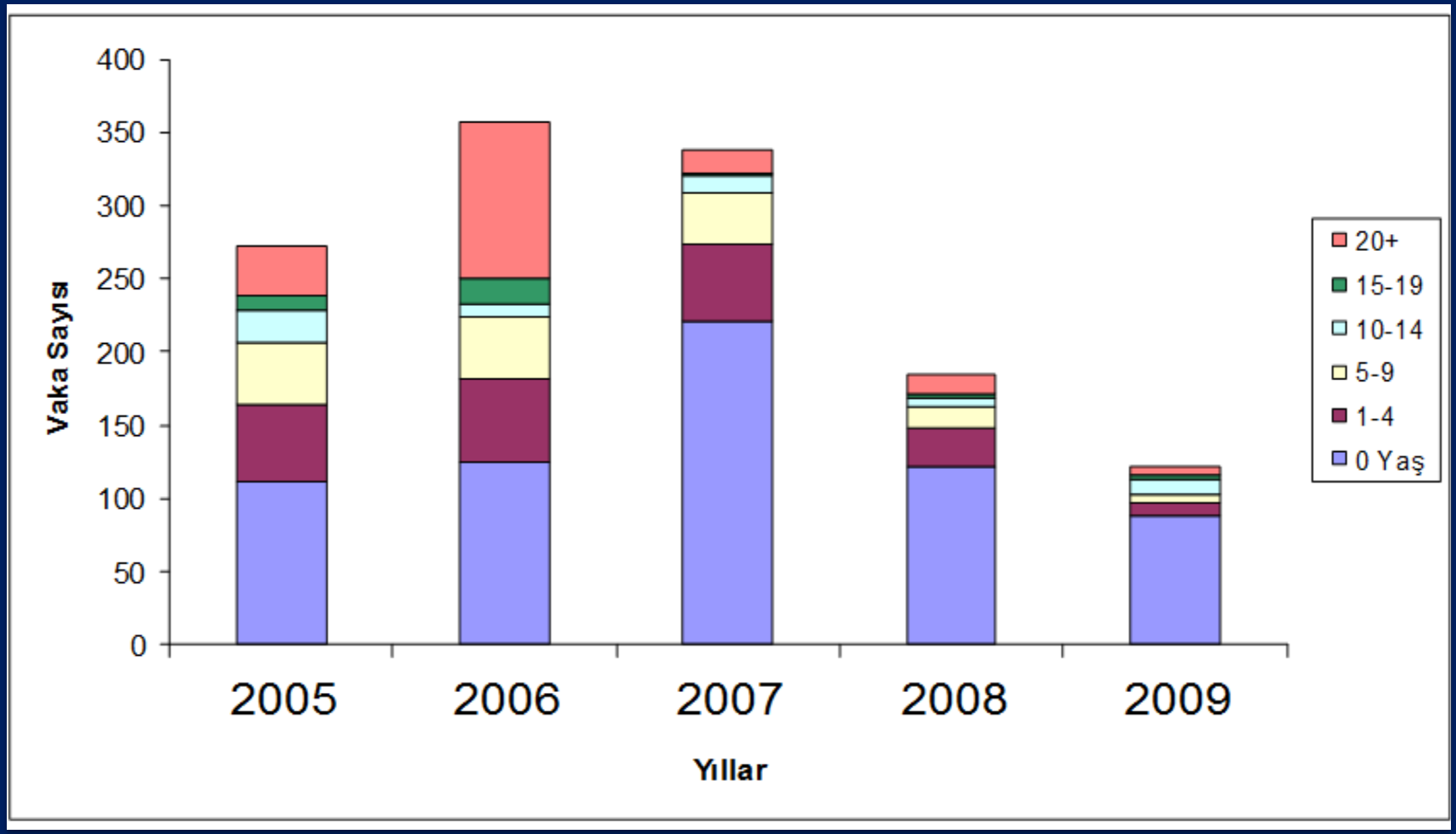


Celentano LP et al. resurgence of pertussis in Europe. Pediatr Infect Dis J. 2005;24:761-5. McIntyre P, Wood N.Pertussis inearly infancy: disease burden and preventive strategies. Curr Opin Infect Dis. 2009;22:215-23. Wood N et al. Pertussis in infants: Preventing deaths and hospitalisations in the very young. J Paediatr Child Health 2008;44:1 61-5.

NEDEN OLGULAR YENİDOĞAN DÖNEMİNDE??



BOĞMACA-TÜRKİYE



YAŞAMIN ERKEN DÖNEMİNDE KORUNMA STRATEJİLERİ

Herd İmmünite Sağlanması

Adolesan ve Erişkin Aşılama

KOZA STRATEJİSİ

Maternal İmmünizasyon

Mevcut aşıların etkin kullanılması

Neonatal aşılama

Gebelerde aşılama

Vaccine 25 (2007) 2634–2642

Available online at www.sciencedirect.com
ScienceDirect
Vaccine
ELSEVIER
m/locate/vaccine

GPI Küresel Boğmaca Girişimi

Prevention of pertussis: Recommendations derived from the second Global Pertussis Initiative roundtable meeting

Kevin D. Forsyth [a,*], Carl-Heinz Wirsing von Konig [b], Tina Tan [c], Jaime Caro [d], Stanley Plotkin [e,f]

İmmünite Sağlanması

KOZA STRATEJİSİ

Maternal İmmünizasyon

Mevcut aşıların etkin kullanılması

Neonatal aşılama

Gebelerde aşılama

Vaccine 25 (2007) 2634–2642

KOZA Stratejisi

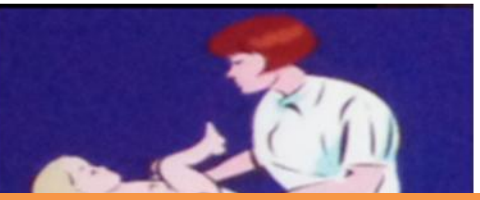
- Küçü

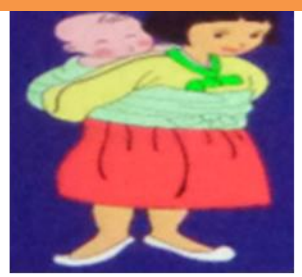
  erişk

  aşıla

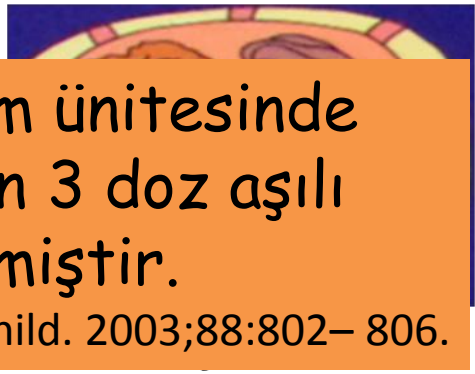
  etra

12 aydan küçük boğmaca vakalarının %75'inde boğmaca kaynağı aile bireyleridir





Diğer çocuklar %33



İngiltere'de yapılan bir çalışmada, yoğun bakım ünitesinde boğmaca nedeniyle yatan infantların %42'sinin 3 doz aşılı kardeşlerinden enfekte olduğu gösterilmiştir.

Crowcroft NS, et al. Arch Dis Child. 2003;88:802– 806.

Bisgard K.M. et al. Infant pertussis: who was the source? PIDJ 2004;23:989

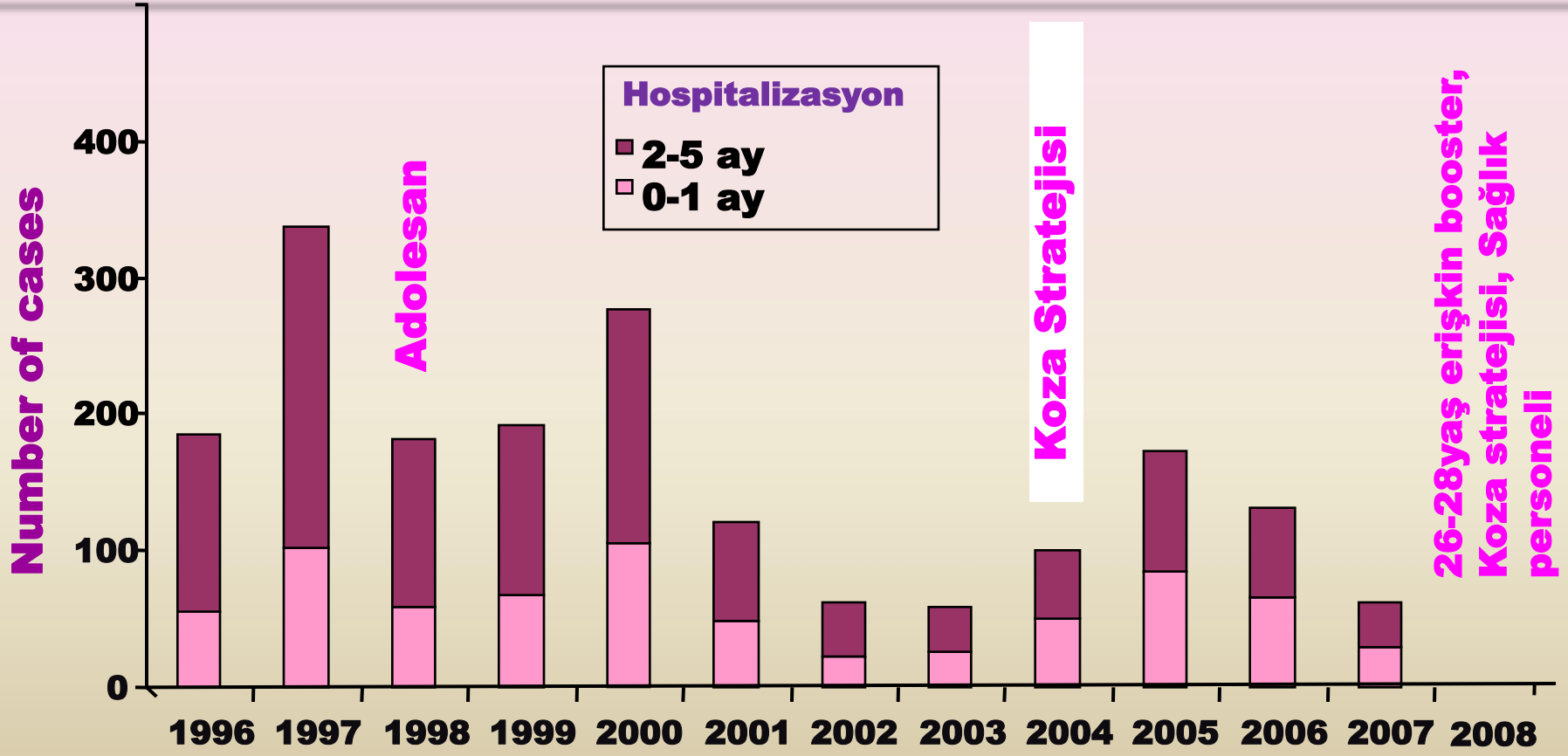
KOZA STRATEJİSİ

- Fransa'da 2004 yılında uygulamaya alınmış, ancak yaygın uygulanması sağlanamamıştır.
- 2006'da ACIP, koza stratejisi kapsamında aile bireyleri, evde beraber kalan kişiler ve sağlık çalışanlarının aşılanmasını önermiş, bebek hastaneden taburcu olmadan aşılamaların tamamlanmasının altını çizmiştir.

KOZA STRATEJİSİ

- Kosta Rika'da 2007 yılında uygulanmaya başlanmıştır.
  - Boğmaca ilişkili bebek ölümlerinin artmasını takiben başlanmış, programa uyumun yüksek olması sayesinde boğmaca ölümlerinde azalma sağlanmıştır.
- California'da 2009-2010 yılında yaşanan son salgında, koza stratejisini uygulayan hastanelerde, boğmaca nedeni ile hastaneye başvuru rakamlarının daha düşük olduğu gösterilmiştir.

Fransa'da Boğmaca Aşılama Stratejileri
« Hastane Bazlı Sürveyans Çalışması,RENACOQ »



1/ Following cocoon strategy, decrease of hospitalisation due to transmission from new parents to infants

2/ Overall decrease in hospitalisations, but need for adults UMV for further pertussis control

Bonmarin I *et al. Med Mal Infect 2009*: epub

Herşeyin İki Yüzü Vardır

KOZA STRATEJİSİ-SORUNLAR

- ABD çalışması 500'den fazla vakada annelerin postpartum immünizasyonu fazla etkili olmamış.

59. Healy CM, Baker CJ: Infant Pertussis: What to Do Next? *Clin Infect Dis* 2012, 54:328–330.
60. Castagnini LA, Healy CM, Rench MA, Wootton SH, Munoz FM, Baker CJ: Impact of maternal postpartum tetanus and diphtheria toxoids and acellular pertussis immunization on infant pertussis infection. *Clin Infect Dis* 2012, 54:78–84.

- ABD, Almanya, Avustralya, Avusturya ve Fransa'da koza stratejisi uygulanmakla birlikte bebeklere bulaşmayı azalttığına dair yeterli kanıt yok.

16 •• Murphy TV, Slade BA, Broder KR, *et al.*, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). Prevention of pertussis, tetanus, and diphtheria among pregnant and postpartum women and their infants: recommendations of the Advisory Committee on Immunization Practices (ACIP). Morb Mortal Wkly Rep 2008; 57:1–51.
A detailed review of pertussis epidemiology, clinical features, diagnosis, antibiotic prophylaxis and DTPa vaccine safety and efficacy. This article presents the CDC Advisory Committee on Immunization practice recommendations for preventing pertussis in pregnant women and infants.

50 de La Rocque F, Grimprel E, Gaudelus J, *et al.* Vaccination in parents of young infants survey. Arch Pediatr 2007; 14:1472–1476.

51 National Health and Medical Research Council. The Australian Immunisation Handbook. 9th ed. Canberra: Australian Government, Department of Health and Ageing; 2008.

KOZA STRATEJİSİ-SORUNLAR

- Tüm aile bireyleri aşılanmalı.
- Boğmacada kaynak vaka her zaman belirlenemez. YBÜ'deki 88 vakanın sadece %27'sinde kaynak saptanmış ve çoğu anne…

Kowalzik F, Barbosa AP, Fernandes VR, *et al*. Prospective multinational study of pertussis infection in hospitalized infants and their household contacts. Pediatr Infect Dis J 2007; 26:238–242.

Vaccine 31 (2013) 5118–5126

Contents lists available at ScienceDirect

Vaccine

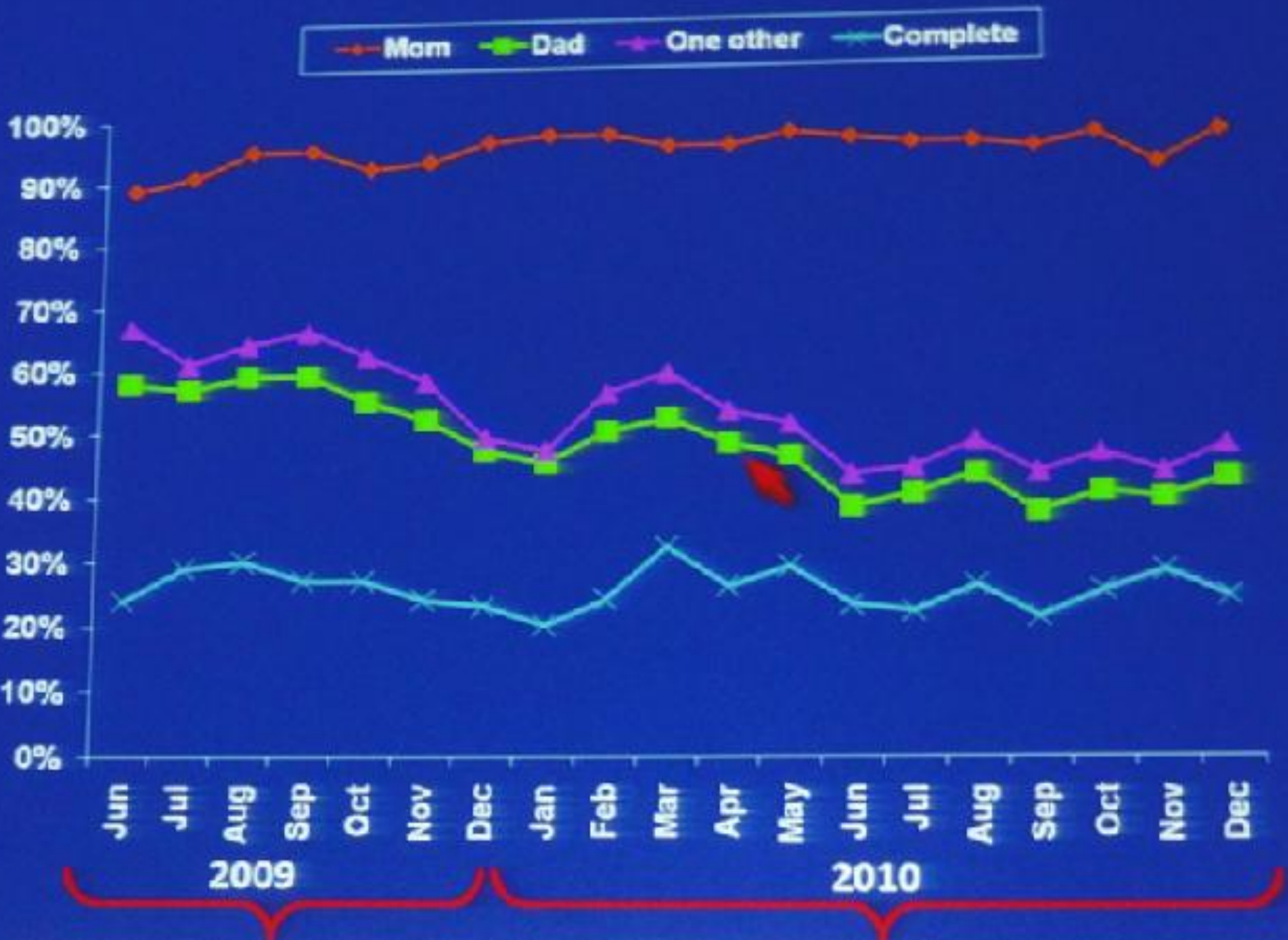
journal homepage: www.elsevier.com/locate/vaccine

Table 4
Pertussis vaccination practices among GPs who said they had changed their practices since the maternity unit's strategy ($n = 307$).

	$n = 304$[a]	%
Vaccinate adults due for their dT-IPV booster*	210	69.1
Vaccinate adults planning a pregnancy*	209	68.8
Vaccinate father-to-be during pregnancy*	158	52.3
Vaccinate mother after the birth*	188	62.5
Vaccinate after breastfeeding finished	45	14.9
Adhere to 2-yr gap after previous dT-IPV*	90	29.7
Vaccinate young adults aged 26–28*	183	60.6
Vaccinate adults looking after an infant*	201	66.3
Vaccinate grandparents	156	51.7

dT-IPV: diphtheria-tetanus-polio vaccine.
Answers marked * refer to the 2008 vaccination recommendations, where the patient has not received the vaccine in the last ten years [8].
The total number of answers is greater than the number of doctors who replied, since several answers could be given (Appendix A).
[a] Missing data ($n = 3$).

Trends over Time



KOZA STRATEJİSİ-SORUNLAR

- "Koza Stratejisi" kısa dönemde başarılı.
- 5 yıllık uygulama sonucu Lokal başarılarla sınırlı…
- Annede antikor oluşumu için en az 14 gün gerekiyor. Bu sürede yenidoğan hassas..
- Doğum hastanelerinde yetersiz benimsenme, Ekonomik sorunlar, lojistik, ikna ve sosyal sorunlar….

Koza Stratejisinde Aşılanması Gereken İnsan Sayısı

The NNV for parent immunization to prevent infant hospitalization/ICU admission or death was thus calculated as follows:

$$NNV = 2\,parents \times (1/ARR)$$

$$NNV = 2\,parents \times [1/(Parent\text{-}attributable\,Infant\,Risk \times Parent\,VE)]$$

Where *Parent-attributable Infant Risk* = *Infant Risk* × *Proportion of Infants Infected by Parents.*

ate to Prevent
and Death
nization

anale Ouakki,[4] Linda Hoang,[5,6] and

ol (BCCDC), [2]School of Population and Public Health,
University, Québec, [4]Institut National de Santé
nent of Pathology and Laboratory Medicine,

Table 3. Number Needed to Vaccinate to Prevent Serious Outcome in Infants (by Age Category in Months) Through Parent Pertussis Immunization[a]

ICU

	No. Hospitalization/ICU Admissions	Infant Risk per 100 000 Hospitalization/ICU Admission	Percentage Attributed to a Parent	
			35% NNV Hospitalization/ICU Admission	55% NNV Hospitalization/ICU Admission
<12 months				
Québec				
2005–2009	265/23	57/7	11 356/97 252	7491/61 952
2005–2009	155/29	33/6	20 099/107 424	12 790/68 361
High hosp (2009)	49/11	50/11	13 356/59 495	8499/37 860
Low hosp (2007)	14/2	15/2	44 332/310 326	28 211/197 480
British Columbia				
2005–2009	48/11	23/5	29 845/130 232	18 992/82 875
High hosp (2005)	16/5	39/12	17 036/54 514	10 841/34 691
Low hosp (2007)	4/0	9/0	71 353/→ ∞	45 406/→ ∞

Abbreviations: → ∞, approaches infinity; hosp, hospital; ICU, intensive care unit; NNV, number needed to vaccinate.

[a] Assumes 85% parent vaccine effectiveness in preventing all infant serious outcomes.

2005-2009 döneminde 1 bebeği boğmacaya bağlı mortaliteden korumak için gereken parental NNV 1 milyon kişi (%35 parental bulaşma).

1 milyon ebeveyn aşılandığında 100,000 YBÜ yatışı ve 10,000 hastane yatışı önlenecektir.

Maliyet-Etkin mi?

- Bu NNV oranları ile maliyet hesaplandığında.
  - NNV ile aşılama masrafları çarpılınca (aşı + uygulama > $20)
    - 1 hastane yatışını önleme maliyeti (~$200 000)
    - 1 YBÜ yatışı (>$2 milyon)
    - Ölüm (>$20 milyon)

ELSEVIER

/vaccine

Brief report

Parent "coco … infants: The …

Michela Merega … Demicheli[a]

[a] ASL-AL Regional Epidemio
[b] Dondena Centre for Resea

4. Discussion

According to regional-specific data, our study found a very high NNV for the parental "cocoon" programme. The NNV remained high when the fertility rate per woman was included in the formula [15] to account for successive births. The cost per case prevented was consequently extreme (>€100,000). The economic evaluation of cocooning was performed through a CBA, as the monetary approach is generally welcomed by public decision-makers, especially in the Italian setting [16]. The alternative use of quality adjusted life years (QALYs) as a benefit measure could have been problematic in the case of pertussis since QALY data are not directly available and the quality of life may not be the relevant outcome. CBA demonstrates that the introduction of parental "cocoon" vaccination would be poorly effective in reducing the burden of hospitalized cases and that the programme would determine net costs instead of net savings.

Our findings are consistent with those of the study conducted in 2011 [9] in two Canadian provinces (Québec and British Columbia), both experiencing low rates of pertussis (1.4 and 2.8 respectively in 2010). The NNV for death was at least 1 million, for intensive care unit admission it was ~100,000 and for averted hospitalization it was >10,000 based on 35% parent-attributable infant risk.

Our study only assessed direct infant hospitalization costs (3% of "cocoon" cost). We did not include direct costs due to pertussis morbidity in adults or other *herd immunity* effects. A study conducted at Anna Meyer's Children's Hospital in Florence demonstrated that the hospitalization cost of a paediatric case is higher than that calculated through the DRG (€511 per day) [20]. If this value is used, Piemonte hospitalization costs would be higher (€197,450) but the economic performance of cocooning wouldn't be modified.

These results contradict more optimistic outcome estimates [1,8] and confirm that a parental "cocoon" strategy is not favourable in a context of low pertussis incidence. Cocooning shows to be extremely resource intensive and poorly efficient in reducing pertussis-related hospitalizations. Therefore, a recommendation for the "cocoon" programme is crucially dependent upon the epidemiological context in which it is proposed. Further studies assessing the proportion of cases due to transmission from household members should be encouraged.

Table 1
NNV and costs to prevent hc … ed to a parent

	Scenario B: 40%	Scenario C: 55%
<3 months		
2005–2010	11,802	8584
Cost (€)	218,927	159,233
2009 (high hosp)	9120	6633
Cost (€)	169,176	123,042
2005 (low hosp)	25,080	18,240
Cost (€)	465,234	338,352
<12 months		
2005–2010	7431	5404
Cost (€)	137,845	100,244
2009 (high hosp)	5989	4356
Cost (€)	111,096	80,804
2005 (low hosp)	14,862	10,809
Cost (€)	275,690	200,507

American Journal of Infection Control 40 (2012) 872-6

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Practice forum

Free vaccine programs to cocoon high-risk infants and children against influenza and pertussis

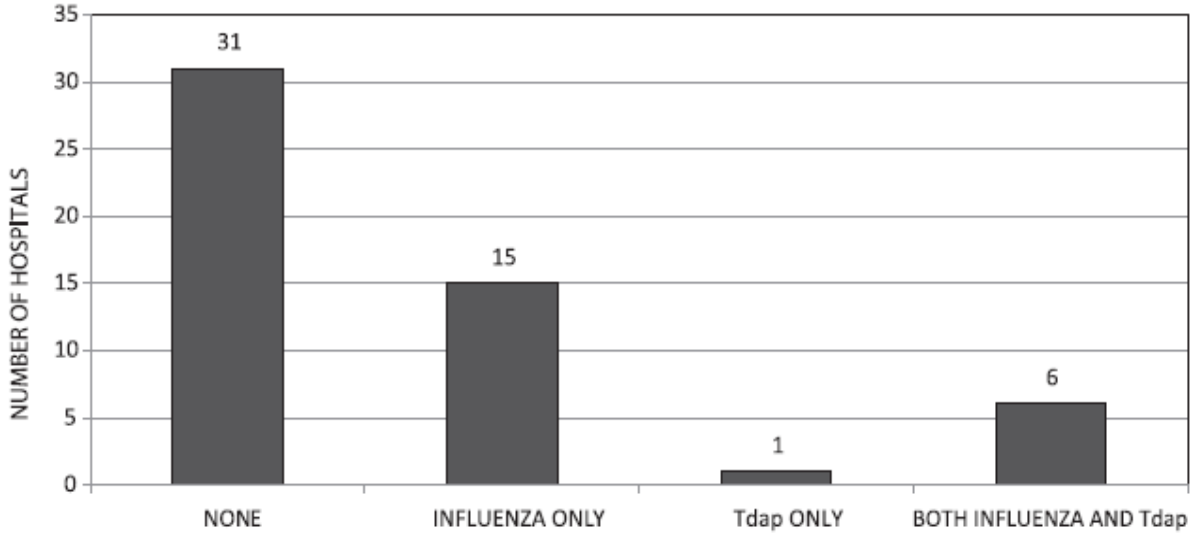


Fig 1. Number of pediatric hospitals with free influenza or Tdap vaccine programs. A total of 53 hospitals responded to the question, "Does your hospital currently offer free influenza or Tdap vaccine to the adult household contacts of your established pediatric patients?"

KOZA STRATEJİSİ-ÇÖZÜMLER

- 2010 Kaliforniya salgınında
- Koza+ erişkin ve adolesan boosterları etkili olmuş.
- 100,000'de 23.4 vakadan 2'ye inmiş.

California Department of Public Health: *California Department of Public Health. Pertussis Report, April 24, 2012.*. Available at: http://www.cdph.ca.gov/programs/immunize/Documents/PertussisReport2012-04-24.pdf (accessed Dec 5, 2012).

- Erişkin aşılaması: 20 yaşından itibaren her 10 yılda bir rapel ve ek olarak KOZA

52 Van Rie A, Hethcote HW. Adolescent and adult pertussis vaccination: computer simulations of five new strategies. Vaccine 2004; 22:3154–3165.

- Sağlık çalışanlarının aşılanması. ABD'de bu maliyet etkin bulunmuş.

55 Calugar A, Ortega-Sanchez IR, Tiwari T, *et al.* Nosocomial pertussis: costs of an outbreak and benefits of vaccinating healthcare workers. Clin Infect Dis 2006; 42:981–988.

KOZA STRATEJİSİ-ÇÖZÜMLER

Direkt Koruma:

1) Pasif aşılama: Anne aşılaması

2) Aktif aşılama: Doğum sonrası bebeğin aşılanması. En erken 6.haftada aşılama

60 World Health Organization. WHO Immunization Schedule. World Health Organization Immunization Policy: Global Programme for Vaccines and Immunization-Expanded Programme on Immunization. WHOGPV/GEN/95.03 Rev.1. 1996; Geneva: World Health Organization; 2008.

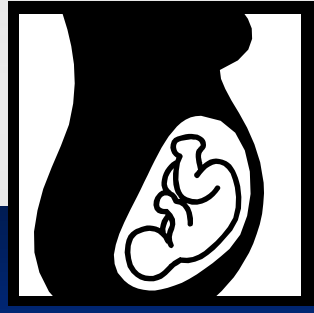
Aşı yaşının 8 haftadan 6 haftaya alınması mortalite ve morbiditeye %9 azaltmış

61 Shinall MC Jr, Peters TR, Zhu Y, *et al.* Potential impact of acceleration of the • pertussis vaccine primary series for infants. Pediatrics 2008; 122:1021–1026.

This article models the impact of giving the first dose of DTPa vaccine at 6 weeks instead of 2-months-old in the USA. Results suggest a reduction in hospitalizations and deaths in under 3-month-olds of 6–9%.

GEBE AŞILAMASI

GEBE AŞILAMASI: NEDENLERİ



1) Aşı serisi tamamlanmadan görülen vakaların fazlalığı

2) DTP'nın erişkinlerde çok immünojen olması.

3) Gebe kadınlar sık kontrole geldiğinden ulaşıma kolaylığı

4) Aşı gebelikte çok iyi tolere edilir.

1940-50'lerden beri çalışılmış bir konu

GEBE AŞILAMASI: ÖNEMİ

- Annelerin doğum anında immün olmalarını garanti ediyor.
- Transplasental boğmaca antikorlarının geçişi ile bebeklerin Primer DTaB serisi tamamlanana kadar korunmasını sağlıyor.

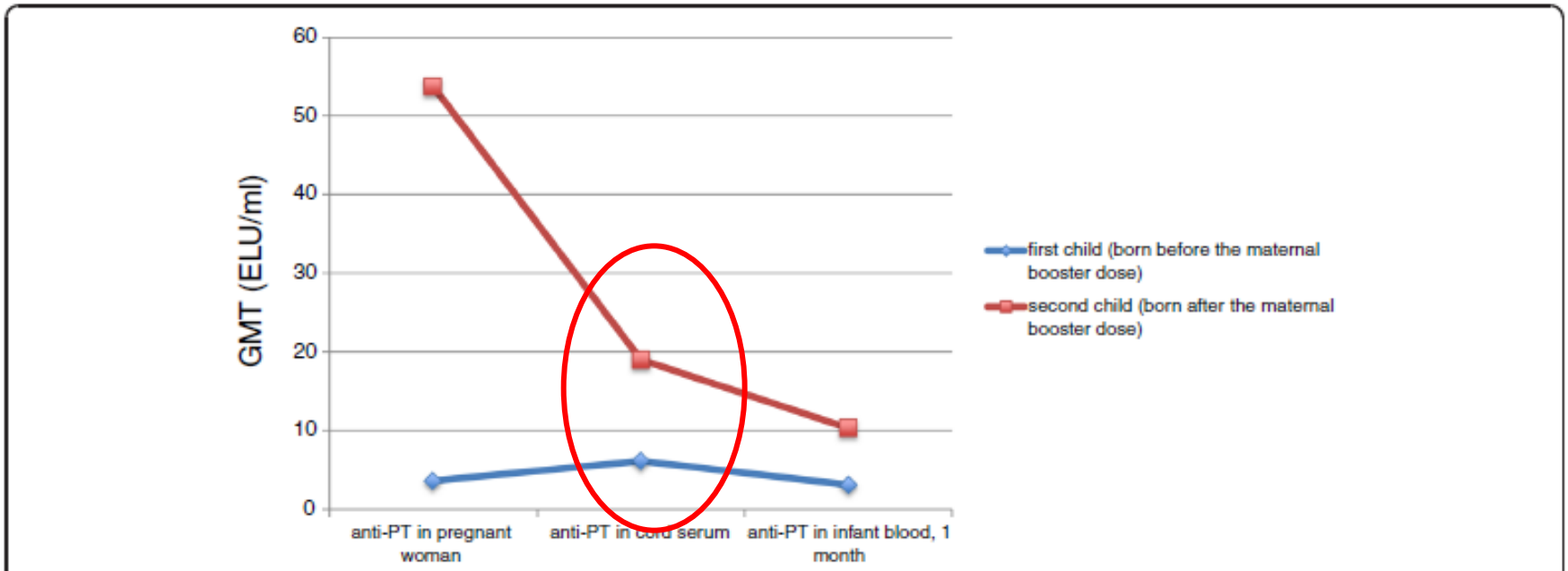


Figure 2 Geometric mean titers (GMT) for anti-pertussis toxin (PT) antibodies in women and children before and after a maternal booster dose (from [44], modified).

4. Leuridan E, Hens N, Peeters N, de Witte L, Van der Meeren O, Van Damme P: Effect of a prepregnancy pertussis booster dose on maternal antibody titers in young infants. *Pediatr Infect Dis J* 2011, **30**:608–610.

Tdab ve Gebelik

- ACIP 22 Haziran 2011'de aşılanmamış gebelere Tdab

MMWR 2011; 60: No: 41

Tdab ve Gebelikte Güvenilirlik

- VA
  çal
  -
- Dü

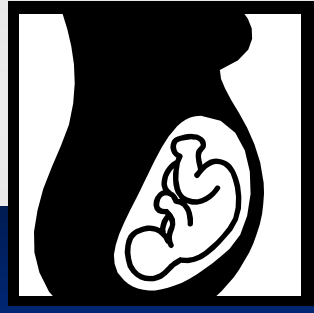
VAERS Jan 1 2005-Jun 30, 2010

- 132 (1.2%) of 10,350 reports after Tdap involved administration during pregnancy
  - 6 (4.5%) classified as serious
    - 2 ruptured ectopic pregnancies, stillbirth, influenza, gastroschisis, laryngotracheomalacia)
  - No deaths
  - 22 (16.7%) spontaneous abortion
  - 7 (5.3%) gestational diabetes
  - 3 (2.3%) oligohydramnios
  - 1 (0.8%) toxemia of pregnancy
  - 2)1.5%) preterm delivery
  - 2 (1.5%) stillbirth
- No unexpected pattern or unusual events

Zheteyeva et al. AJOG 2012

MMWR 2011; 60: No: 41

GEBE AŞILAMASI: SORUNLAR



1) Gebelikte aşılama sorunu (Özellikle gelişmiş ülkelerde)

2) Pasif geçen antikorlar aşı öncesi dönem kadar yüksek olmayabilir.

3) Anne antikor düzeyleri hızla azalıyor. 6-8 hafta sonrası bebeğini koruyabilir mi?

Edwards ve ark: Yenidoğanda PT yarılanma süresi 36 gün, PHA 55.gün

Edwards KM. Pertussis: an important target for maternal immunization. Vaccine 2003; 21:3483–3486.

GEBE AŞILAMASI: SORUNLAR

4) Anneden geçen antikorların aşı yanıtını azaltması

- Körleşme olabilir mi?
  - Maternal antikorların bebeğe 2.ay uygulanacak DTaB aşısının etkisini azaltması
- Bu durumun klinikteki önemi bilinmiyor.
- Bu olay kısa sürelidir (Maternal antikorların yarı ömrü 6 hafta)

GEBE AŞILAMASI: SORUNLAR

5) Erişkinde DTPa booster antikorları hızla ilk 12 ayda azalmaya başlar.

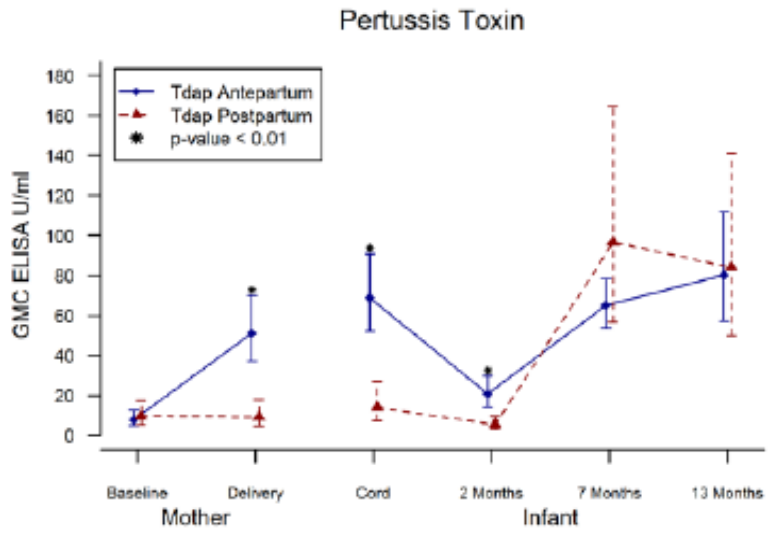
İlerdeki gebeliklerde de aşının tekrarına gerek olacak..

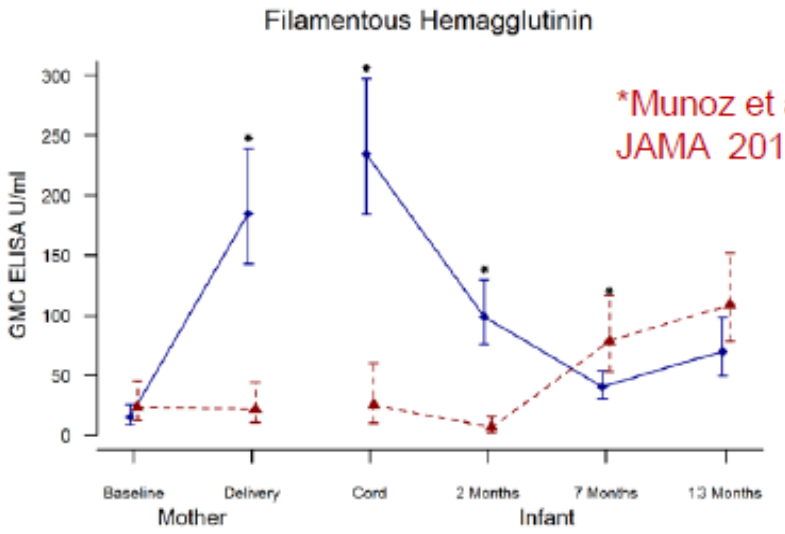
Olası kazançlar > olası riskler

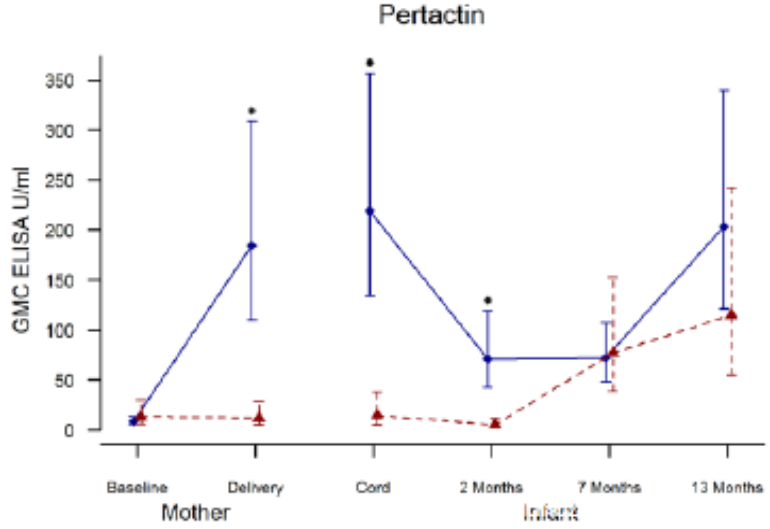
Gebelikte aşılama daha maliyet –etkin bulunmuş.

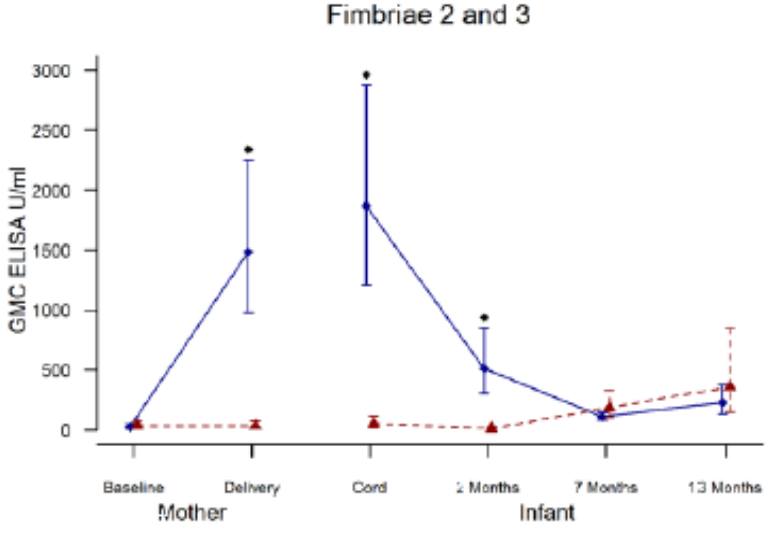
MMWR 2011; 60: No: 41

İmmünojenisite: Anne ve Bebekte Boğmaca antikorları







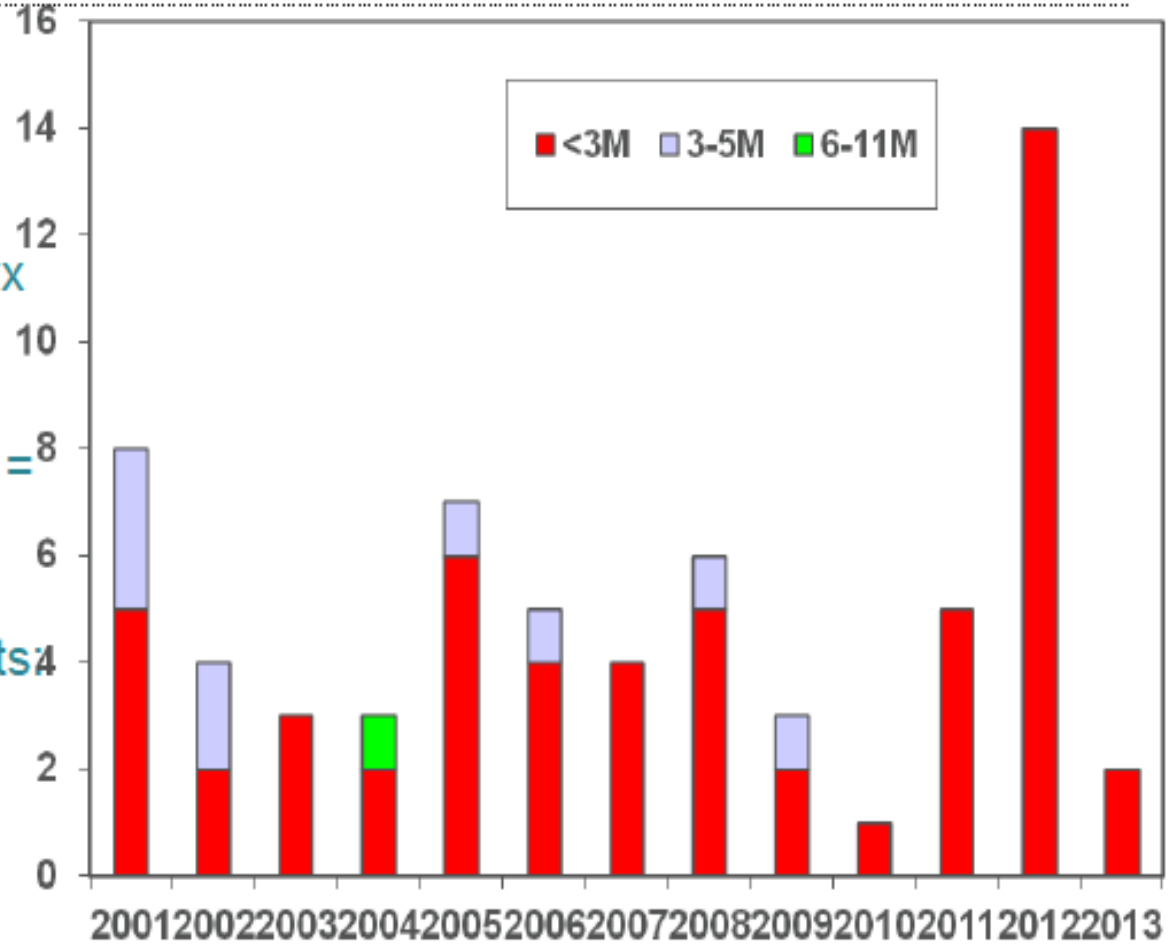


Effectiveness of maternal pertussis vaccination in England: an observational study

www.thelancet.com Published online July 16, 2014 http://dx.doi.org/10.1016/S0140-6736(14)60686-3

Gayatri Amirthalingam, Nick Andrews, Helen Campbell, Sonia Ribeiro, Edna Kara, Katherine Donegan, Norman K Fry, Elizabeth Miller, Mary Ramsay

- 2012: Serious Pertussis outbreak in UK, with
- Oct. 2012: Pregnant women vx started using TdapIPV
- Vaccine coverage in first year = 64%
- Vaccine effectiveness in infants calculated based on cases of diseaes in babies in first 2-3 months of life.



Introduction of Maternal Pertussis Vaccination – UK, 2012-2013*

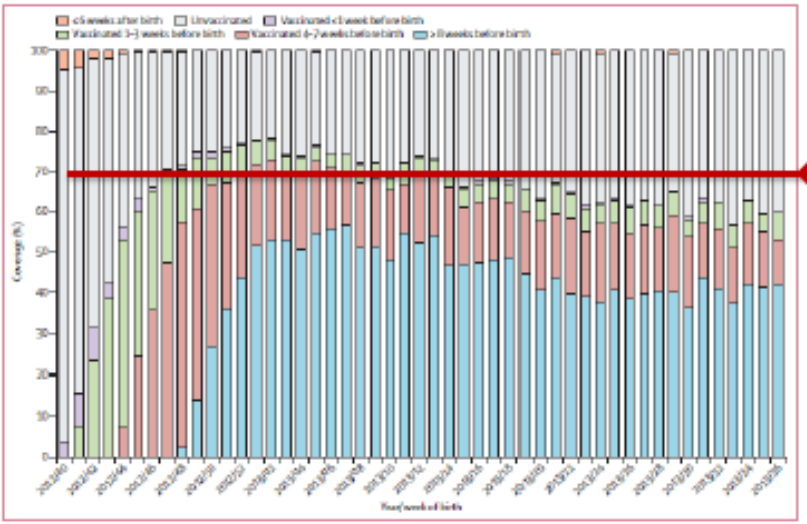


Figure 1. Estimated maternal vaccine coverage by week of birth
Figure shows coverage from week 40, 2012, to week 35, 2013. Figure based on data provided by the Clinical Practice Research Datalink.

~70% rate of maternal TdapIPV uptake over time

Reduction in Pertussis cases

Mat Vx begun

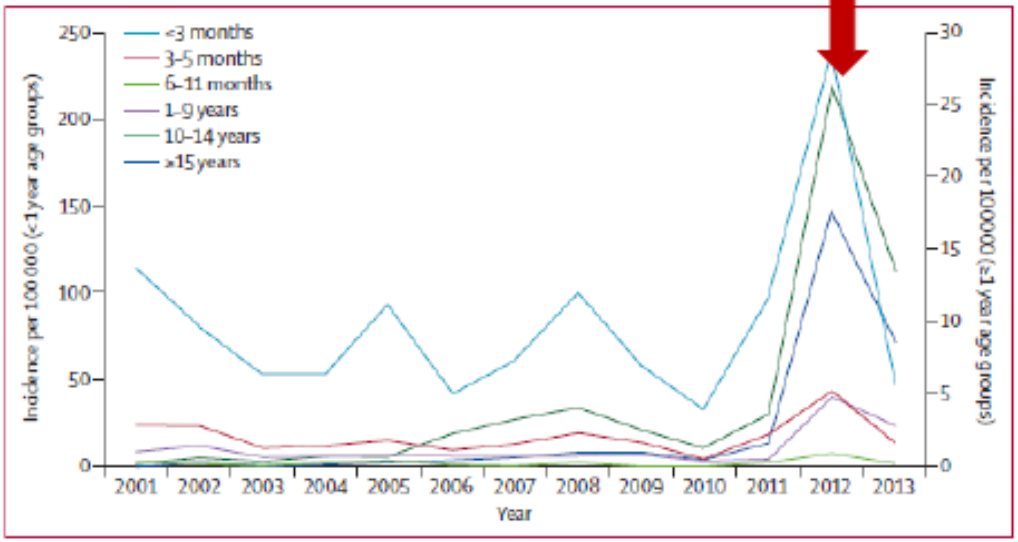


Figure 2: Annual incidence of laboratory-confirmed cases of pertussis by age group
Figure shows incidence from 2001 to 2013 in England only.

Lancet 2014

DİĞER AŞILAR

- Respiratuvar Sinsisyal Virus Aşısı (RSV)
- Sitomegalovirus Aşısı (CMV)
- Pnömokok aşısı
- Grup B streptokok aşısı

Vaccine. 2014 Oct 30;32(51):6948-6955. doi: 10.1016/j.vaccine.2014.10.060. [Epub ahead of print]

Maternal immunization with pneumococcal 9-valent conjugate vaccine and early infant otitis media.

Daly KA[1], Scott Giebink G[2], Lindgren BR[3], Knox J[1], Haggerty BJ[4], Nordin J[4], Goetz S[5], Ferrieri P[6].

Author information

Abstract

A randomized trial of an investigational 9-valent pneumococcal conjugate vaccine (PCV-9) or placebo given to pregnant women during the last trimester to prevent early infant otitis media (OM) was conducted. All infants received Prevnar® at 2, 4, 6, and 12 months. Clinic and adverse event records were reviewed to identify OM. Variables significantly related to acute OM by age 6 months ($p<0.05$) were: vaccine group (9 valent or placebo), sibling history of tympanostomy tubes, upper respiratory infection, and number of clinic visits by 6 months. Infant OM rates were similar between 6 and 12 months (58% and 56%). Results suggested that immunizing pregnant women with PCV-9 increased infants' risk of acute OM in the first 6 months of life, and this correlated with decreased infant antibody responses to their infant Streptococcus pneumoniae vaccine serotypes, but did not influence antibody responses to 3 other serotypes two of which were in maternal vaccine (types 1 and 5) and one was a control (type 7F). Explanations for these results include dampening of infant antibody production by high levels of passively acquired maternal pneumococcal antibodies and/or altered B lymphocyte immune responses in infants exposed to these specific polysaccharide antigens in utero.

KEYWORDS: Maternal immunization; Otitis media; Pneumococcal antibodies; Pneumococcus

SONUÇLAR

- Gebelerin 3.trimesterde aşılanması plasental antikor geçişi sayesinde bebeklerin boğmaca ve influenza gibi morbidite ve mortalitesi yüksek hastalıklardan korunmasını sağlayacaktır.
- Maternal aşılama anne sağlığına da önemli katkılar sağlamaktadır.
- Gebe aşılaması inaktif ve toksoid aşılar açısından güvenilir ve maliyet-etkin yaklaşımlardır.

SABRINIZ İÇİN TEŞEKKÜR EDERİM