

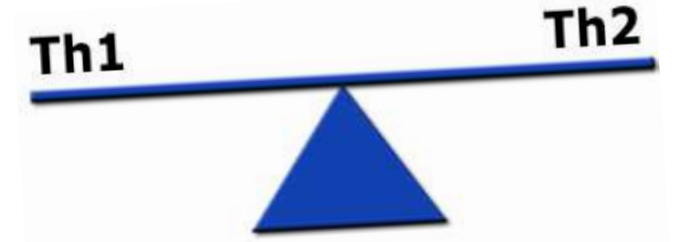
# GEBELİKTE AŐILAMA

PROF.DR.AYTEN KADANALI  
Biruni Üniv.Tıp Fakóltesi



# NEDEN GEBELER AŞILANMALI?

- Gebelikte fetal tolerans sağlanması için Th-1 cevabı yerine Th-2 cevabı öne çıkar...infeksiyona yatkınlık artar
- Artmış östrojen ve progesteron seviyesi
- Azalmış IL ve artmış kortizol düzeyleri
- Hücrel immünitinin baskılanması



- ✓ Gebelikte kalp hızında ve oksijen tüketiminde artış
- ✓ Akciğer kapasitesinde azalma,
- ✓ İmmünolojik işlevlerde değişme görülür
- ✓ Hemodilüsyonla düşük IgG düzeyleri

## NEDEN GEBELER AŐILANMALI?

- Anne adayı aŐı ile nlenebilir hastalıklara normal poplasyona gre daha yatkın
- Tercihen gebelik ncesi planlamalarla aŐılama tamamlanmalı

- Annenin, fetusun ve yenidođanın nlenebilir morbidite ve mortalitesinin azaltılması
- Anneden geen pasif antikorlarla yenidođanın ilk altı ayın enfeksiyonlardan korunması iin



## Aşı uygulamasına bakış açıları

- İnançlar, sosyodemografik özellikler, önceki deneyimler, beklentiler, sağlık hizmetine bakış açısı etkilemekte
- Şehirde yaşamak aşı kabulünü arttırırken grip aşısının kendisinin gribe neden olacağına düşünülmesi redde neden olmakta
- Daha önce grip aşısı yaptıranların gebelikte de yaptırma oranı daha yüksektir
- Gebelerin gebelik sırasında aşıları reddetmelerine en sık neden olan etmen aşının bebeklerine zarar vereceği endişesidir
- Gebe izlem sıklığı aşı uyumunu artırıyor
- Doktor önerisi aşılamaı artırıyor

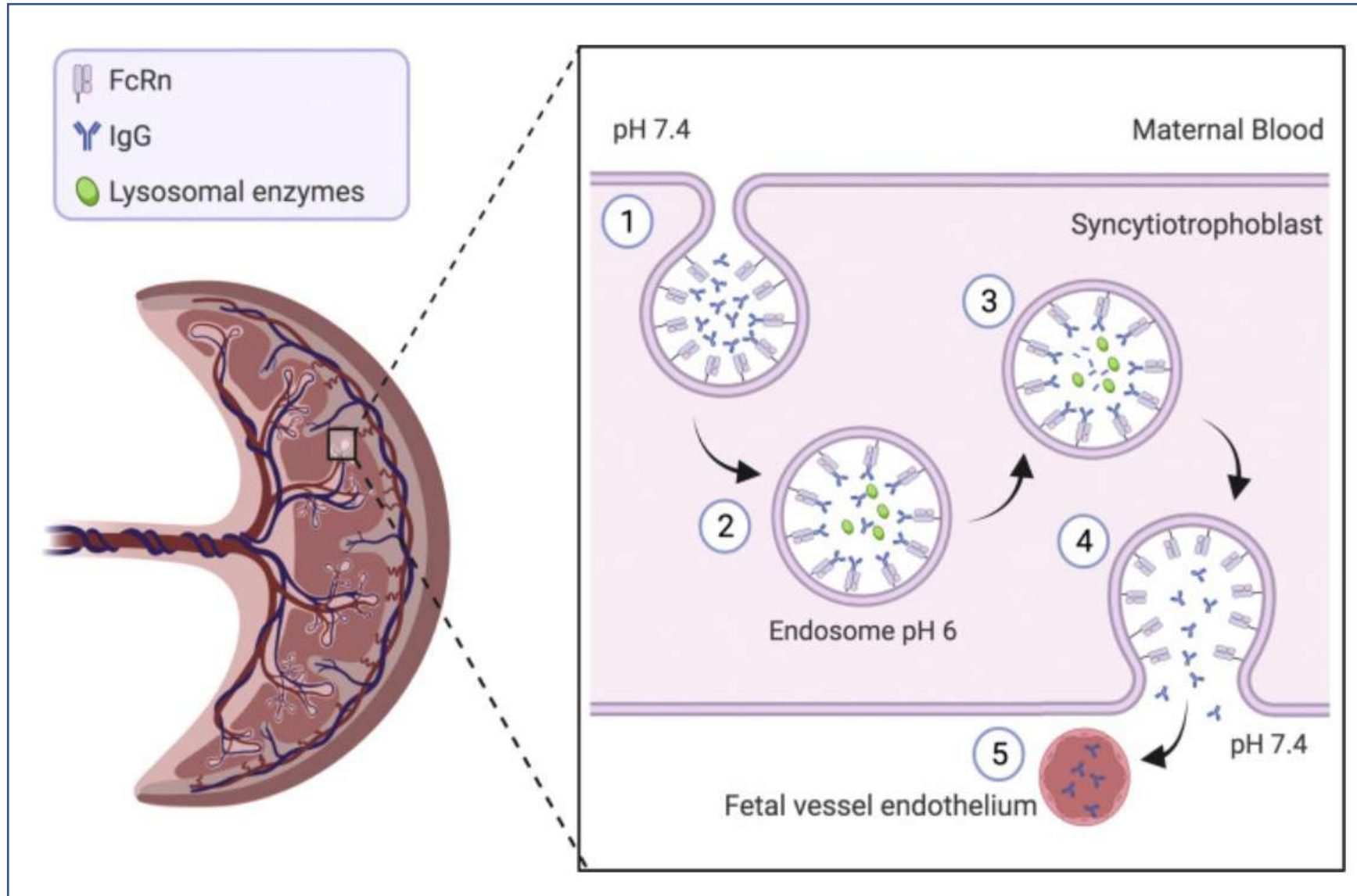


# The Influence of Maternal Immunization on Infant Immune Responses

J. A. Englund

- Gebelikte aşılama, erken dönemde yenidoğanda koruyucu olan **antikorun transplental transferine** yol açar.
- Bu aktif transfer, IgG1 ve IgG3 alt sınıflarının taşınması.
- **Transplental geçiş** bir dizi faktöre bağlıdır: plasental bütünlük, annedeki toplam IgG konsantrasyonu, aşı türü, gebelik sırasında aşı uygulama zamanlaması, fetüsün gebelik yaşı

# Maternal IgG antikorların transplental fetüse geçişi



# Gebelikte Aşılamada Temel Prensipler

- Canlı aşılar gebelikte yapılmaz
- İnaktif virüs - bakteri ve toksoid aşılamalarda herhangi bir risk izlenmemiştir.
- Emzirme döneminde aşılamaya yapılabilir
- Aşılamaya genellikle 2. trimesterde başlanır





## Pregnancy and Vaccination

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Vaccines and Pregnancy

Vaccines Before  
Pregnancy

**Vaccines During and After  
Pregnancy**

Family and Caregivers

Vaccine Safety for Moms-

# Vaccines During and After Pregnancy

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## COVID-19 Vaccination

Get the latest information about [COVID-19 vaccines while pregnant or breastfeeding](#).

**A pregnant person should get vaccinated against whooping cough and flu during each pregnancy to protect herself and her baby, with immunity for the first few months of life.**



## Pregnancy and Vaccination

### Vaccine Safety for Moms-To-Be



[Español \(Spanish\)](#)



#### COVID-19 Vaccination

Get the latest information about [COVID-19 vaccines while pregnant or breastfeeding](#).

**Pregnant women may safely receive inactivated vaccines (Tdap and flu), mRNA (Moderna and Pfizer), and viral vector vaccines (J&J).**

**Table 1.** Classification of vaccines during pregnancy according to their safety profiles and recommendations in vaccination programs or special circumstances and settings.

Category of Vaccination during Pregnancy	Types and Comments	Active Immunization Products	Abbrev.
Routine vaccinations	Inactivated vaccines approved in European countries	Inactivated influenza vaccines	IIV3, IIV4
		Tetanus, diphtheria, pertussis vaccine	Tdap
Vaccinations in special circumstances and settings	Different non-LAV types of vaccines, some with ongoing safety monitoring	COVID-19 vaccine	
		Hepatitis A and B vaccines	HepA, HepB
		Pneumococcal vaccines	PPSV23, PCV13
		Meningococcal vaccines	MenACWY
		<i>Haemophilus influenzae</i> type b vaccine	Hib
		Inactivated polio vaccine	IPV
		Inactivated rabies vaccine	RAB
		Inactivated tick encephalitis vaccine	TBE
		Inactive typhoid vaccine	Ty21a
		Human papillomavirus vaccine *	HPV
Contraindicated vaccinations	LAV vaccines contraindicated during pregnancy	Measles, mumps, and rubella vaccine	MMR
		Varicella vaccine	VAR
		Live-attenuated influenza vaccine	LAIV
		Live zoster (shingles) vaccine	ZVL
		Yellow fever and dengue vaccines	YF, DEN

Legend: Abbrev. = abbreviation; \* HPV vaccine is generally not recommended during pregnancy due to a lack of data regarding its safety and efficacy in this population; IIV3, IIV4 = inactivated influenza vaccines trivalent, tetravalent; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis; COVID-19 = coronavirus disease 2019; Hib = *Haemophilus influenzae* type b vaccine; HPV = human papillomavirus; MMR = measles, mumps, and rubella; LAV = live-attenuated virus.



The American College of  
Obstetricians and Gynecologists  
WOMEN'S HEALTH CARE PHYSICIANS

Number 741 (June 2018. Reaffirmed October 2021)

AC

Number 741

Immunization

This Committed  
Health Prepared

Maternal

ABSTRACT

### Recommendations

The American College of Obstetricians and Gynecologists makes the following recommendations:

- Obstetrician–gynecologists and other obstetric care providers should routinely assess their pregnant patients' vaccination status.
- Obstetrician–gynecologists and other obstetric care providers should recommend and, when possible, administer needed vaccines to their pregnant patients.
- Women who are or will be pregnant during influenza season should receive an annual influenza vaccine.
- All pregnant women should receive a tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap) vaccine during each pregnancy, as early in the 27–36-weeks-of-gestation window as possible.
- Other vaccines may be recommended during pregnancy depending on the patient's age, prior immunizations, comorbidities, or disease risk factors.

OPINION

Group  
on, Infectious Disease, and Public  
MD.

pregnant women. Influenza

s-of-gestation window as

- Tüm gebelere in
- Tdap uygulanm

acellular pe  
possible.

Gebelikte aşılama yapılmaması influenza, boğmaca gibi önlenabilir enfeksiyonlara bağlı maternal ve fetal morbidite ve mortaliteyi artırır..

Annelerin yoğun bakıma girmesine, erken doğuma ve düşük doğum ağırlıklı bebek doğumuna yol açabilir.

Covid pandemisi, hamilelikte aşı kullanımı konusunu gündeme getirmiştir

İnaktive aşı ve toksoidlerle bağışıklamanın güvenli olduğu gösterilmiştir.

Kural olarak, canlı atenüe aşılar hamilelikte önerilmez.

## Gebe Aşılamaında Öneriler

Vaccine*	Indicated During Every Pregnancy	May Be Given During Pregnancy in Certain Populations	Contraindicated During Pregnancy	Can Be Initiated Postpartum or When Breastfeeding or Both
Inactivated influenza	X <sup>†,1,2</sup>			X <sup>‡</sup>
Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap)	X <sup>†,3,4</sup>			X <sup>‡</sup>
Pneumococcal vaccines		X <sup>§,5,6</sup>		X <sup>§,5,6</sup>
Meningococcal conjugate (MenACWY) and Meningococcal serogroup B		X <sup>  ,7</sup>		X <sup>  ,7</sup>
Hepatitis A		X <sup>¶,8</sup>		X <sup>¶,8</sup>
Hepatitis B		X <sup>¶,9,10</sup>		X <sup>¶,9,10</sup>
Human papillomavirus (HPV)**				X <sup>** ,11,12</sup>
Measles–mumps–rubella			X <sup>††,13,14</sup>	X <sup>††</sup>
Varicella			X <sup>††,13,15,16</sup>	X <sup>††</sup>

\*An "X" indicates that the vaccine can be given in this window. See the corresponding numbered footnote for details.

<sup>†</sup>Inactivated influenza vaccination can be given in any trimester and should be given with each influenza season as soon as the vaccine is available. The Tdap vaccine is given at 27–36 weeks of gestation in each pregnancy, preferably as early in the 27–36-week window as possible. The Tdap vaccine should be given during each pregnancy in order to boost the maternal immune response and maximize the passive antibody transfer to the newborn. Women who did not receive Tdap during pregnancy (and have never received the Tdap vaccine) should be immunized once in the immediate postpartum period.<sup>1–3</sup>



# NIH (National Institutes of Health)



## **Tüm Gebeler**

Influenza

Tetanos Difteri Pertusis (Tdap/Td)

## **Postpartum Kadınlar**

MMR (kızamık-kızamıkçık-kabakulak)

Suçiçeği

## **Risk Faktörü Olan Gebeler**

Hepatit A

Hepatit B

Pnömonokok (PPSV23)

Meningokok (MPSV4)

Sarı Humma

Japon ensefaliti

Tifo

# Gebelikte Baęışıklama Uygulamaları

1. Rutin önerilen aşılar
2. Gebelikte uygulanması kontraendike olan aşılar
3. Özel durumlarda uygulanabilen aşılar



# Gebe Aşılamaında Öneriler

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# İnfluenza



- ❖ **İnfluenza - Gebelikte daha ciddi sorunlar**
- ❖ Spontan abortus, ölü doğum, neonatal ölüm, preterm doğum, düşük doğum ağırlığı
- ❖ Gebelerde ve altı aydan küçük bebeklerde de mortalite ve morbidite riski normal popülasyondan daha yüksektir
- ❖ **<6ay YD için aşı yok** ve antiviral tedavilerin kullanımı henüz onaylanmadığından anneden geçen antikorlar; korunmada tek seçenek gibi görünmekte
- ❖ 2009 yılı H1N1 pandemisinde gebelerde hastaneye yatış % 7.2, ölümlerin %5'i gebeler (toplam ölümlerin %1'i)
- ❖ Gebelikte etkin strateji → ***inaktive Aşı***

# İnfluenza

CDC, ACOG, ACIP gebelikte rutin influenza aşısı öneriyor

- Gebelik: Koruyucu antikor yanıtı annede %93 - YD'da %87,
- <6 ay. YD: komplikasyonlar – ölüm riski belirgin yüksek
- İİA'nın anne ve bebekte herhangi bir ciddi yan etkiye neden olmaz, annenin influenza ilişkili hastaneye yatışını % 40 azaltır
- Erken doğum, ölü doğum, düşük doğum ağırlığı riskini arttırmadığı gösterilmiştir



# İnfluenza

- \* Aşı
  - Herhangi bir trimesterde yapılabilir
  - **28 – 32. haftalar arası** → doğumda IgG miktarı YD için en uygun koruyucu düzeye ulaşmış olacaktır
  - Tüm gebelere - her gebelikte
- \* 2012, WHO, Strategic Advisory Group of Experts on Immunization
  - . Aşılamada gebeler öncelikli grup kabul ediliyor

# Gebelikte influenza aşısı



- 1918 ve 2009 influenza pandemilerinde **gebelerde morbidite ve mortalite daha yüksek**
- **İnfluenza mevsiminde gebe olan kadınlara**, gebeliğin trimesterine bakılmaksızın inaktive influenza aşısı yaptırmaları önerilir.
- İnfluenza gebelikte daha ağır geçirilebileceği ve **yenidoğanda** anneden geçen **antikorların pasif koruma sağlayacağı için**
- Aşı sonrası erken doğum ve düşük doğum ağırlığının daha az görüldüğü iddia eden çalışmalar vardır

Bloom-Feshbach, Natality Decline and Miscarriages Associated With the 1918 Influenza Pandemic: The Scandinavian and United States Experiences. J. Infect. Dis. 2011,

Wang, R.The effect of influenza virus infection on pregnancy outcomes: A systematic review and meta-analysis of cohort studies. Int. J. Infect. Dis. 2021

Yudin, M. Risk management of seasonal influenza during pregnancy: Current perspectives. Int. J. Women's Health 2014

## Immunogenicity of influenza vaccine in pregnant women

Timo Vesikari<sup>a</sup>, M

Randomized

**Table 2.** Proportions of subjects experiencing adverse events within 21 days after vaccination.

Event	IIV4 (N = 230)		IIV3 (N = 116)	
	n	% (95% CI)	n	% (95% CI)
Immediate unsolicited AE	0	0.0 (0.0 – 1.6)	0	0.0 (0.0 – 3.1)
Solicited reaction	214	93.0 (88.9 – 96.0)	106	92.2 (85.7 – 96.4)
Solicited injection site reaction	207	90.0 (85.4 – 93.6)	93	80.9 (72.5 – 87.6)

vaccination geometric mean titer ratio, 6.3 [95% CI: 5.1 – 7.7] vs. 3.4 [95% CI: 2.7 – 4.3]). At delivery, in both groups, HAI antibody titers for all strains were 1.5 – 1.9-fold higher in umbilical cord blood than in maternal blood, confirming active transplacental antibody transfer. Rates of solicited and unsolicited vaccine-related adverse events in mothers were similar between the two groups. Live births were reported for all participants and there were no vaccine-related adverse events in newborns. These results suggest IIV4 is as safe and immunogenic as IIV3 in pregnant women, and that maternal immunization with IIV4 should protect newborns against influenza via passively acquired antibodies.

Completion

AE leading to study discontinuation	0	0.0 (0.0 – 1.6)	0	0.0 (0.0 – 3.1)
Serious AE	2	0.9 (0.1 – 3.1)	0	0.0 (0.0 – 3.1)
Vaccine-related	0	0.0 (0.0 – 1.6)	0	0.0 (0.0 – 3.1)
Death	0	0.0 (0.0 – 1.6)	0	0.0 (0.0 – 3.1)

Abbreviations: AE, adverse event; CI, confidence interval; IIV4, quadrivalent inactivated influenza vaccine; IIV3, trivalent inactivated influenza vaccine



Available online in

17

# İnfluenza Aşısı



Gebelikte IIV4 ya da IIV3 aşı uygulanabilir

Tüm inaktive aşılar güvenli, immünojenik ve etkindir

RKT: Yenidoğanda aşı ilişkili yan etki bildirilmemiş

*Madhi, S. Influenza Vaccination of Pregnant Women and Protection of Their Infants. N. Engl. J. Med. 2014,*

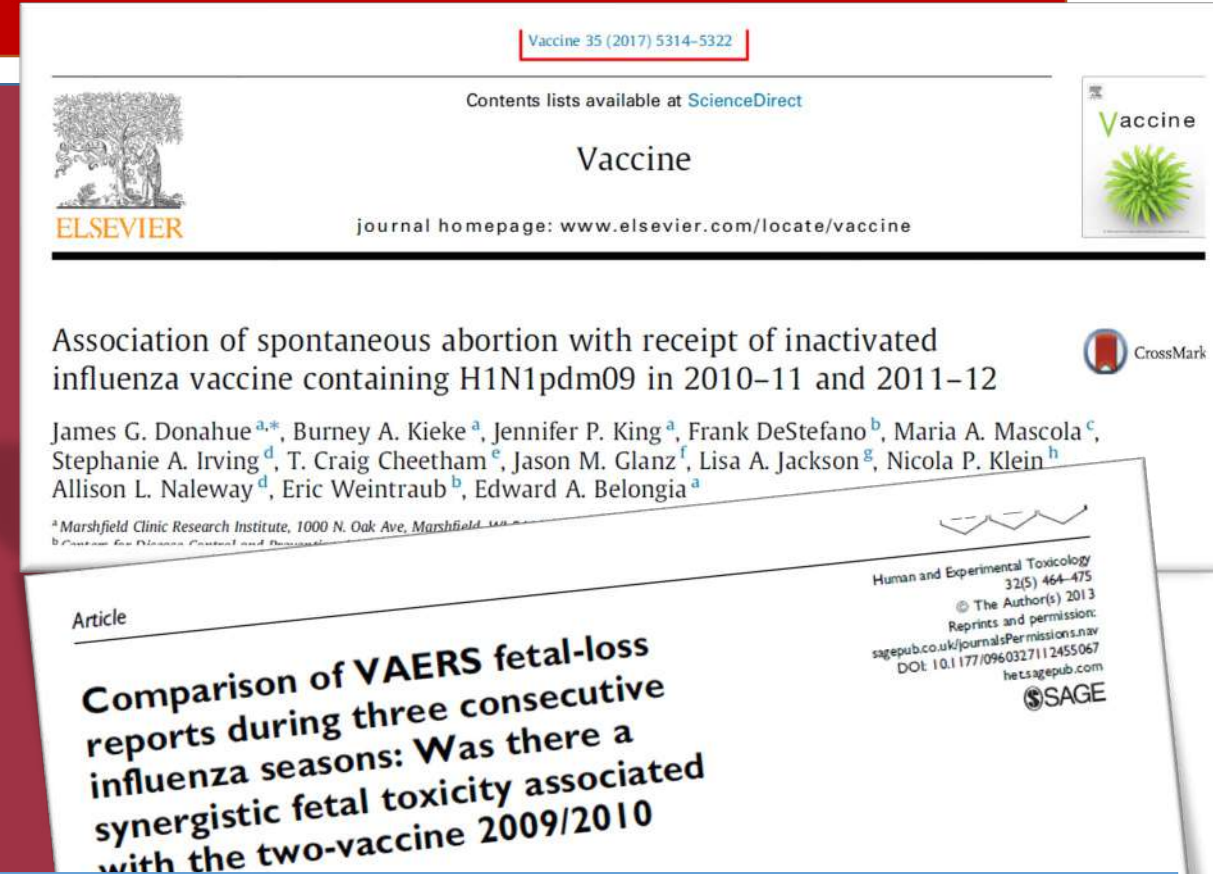
*Steinhoff, M.C.; Year-round influenza immunisation during pregnancy in Nepal: A phase 4, randomised, placebo-controlled trial. Lancet Infect. Dis. 2017*

*Vesikari, T. Immunogenicity and safety of a quadrivalent inactivated influenza vaccine in pregnant women: A randomized, observer-blind trial. Hum. Vaccines Immunother. 2019*

Gebeler influenza açısından riskli gruptadır ve rutin medikal bakım içerisinde öncelikli olarak uygulanmalıdır

# Gebelikte influenza aşısı - kaygılar

- Aşı sonrası spontan abortusta artış
- Aşıda bulunan thiomersal ??  
( genelde multidoz flakonlarda)
  - Civa - otizm ilişkisi
  - Civa toksisitesi



None of the adult flu vaccines to be used in the UK in the 2017-2018 season contain the preservative thiomersal (mercury).

For the 2017-2018 season, manufacturers will produce influenza vaccines containing thimerosal and some vaccines that do not contain thimerosal.



# DOĞUM ÖNCESİ BAKIM YÖNETİM REHBERİ



## Doğum Öncesi Bakım Yönetim Rehberi

T.C. Sağlık Bakanlığı

Halk Sağlığı Genel Müdürlüğü

Kadın ve Üreme Sağlığı Dairesi Başkanlığı

Ankara, 2018

**Gebeye grip sezonunda( Eylül-  
Nisan) grip aşısı öneriniz**



## Pregnancy and Vaccination

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Pregnancy

**Vaccines During and After  
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Vaccine Safety for Moms-

# Vaccines During and After Pregnancy

[Español \(Spanish\)](#)



## COVID-19 Vaccination

Get the latest information about [COVID-19 vaccines while pregnant or breastfeeding](#).

A pregnant person should get vaccinated against **whooping cough** and flu during each pregnancy to protect herself and her baby, with immunity for the first few months of life.

## Use of Tetanus Toxoid, Reduced Pertussis Toxoid, and Acellular Pertussis Vaccines

**Gebelik:** Rutin Tdap aşılama önerilerinde herhangi bir deęişiklik yapılmamıştır.

**Gebeler, aşılanma geçmişine bakılmaksızın her gebelikte 1 doz Tdap almalıdır.**

Tdap, gebelik sırasında herhangi bir zamanda uygulanabilmesine rağmen, 27-36. gebelik haftalarında ve tercihen erken dönemde uygulanmalıdır.

...period, although it may be administered at any time during pregnancy (3,5).

YD'a optimum pasif Ak transferi

# Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccines: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2019

*Weekly* / January 24, 2020 / 69(3);77–83

## Prevention of Neonatal and Obstetric Tetanus

Pregnant women who have completed the childhood immunization schedule and were last vaccinated >10 years previously should receive a booster dose of tetanus toxoid-containing vaccine to prevent neonatal tetanus. The risk for neonatal tetanus is minimal if a previously unvaccinated woman has received at least 2 properly spaced doses of a tetanus toxoid-containing vaccine during pregnancy; at least 1 of the doses administered during pregnancy should be Tdap, administered according to published guidance (3). If >1 dose is needed, either Td or Tdap may be used. The 3-dose primary series should be completed at the recommended intervals.

# Gebelikte Tdap aşısı



- Daha önceden Tetanoz aşısı olan ancak 10 yıldan fazla süre geçenlerde bir doz Tdap aşısı önerilmelidir (Tercihen 27-36 hafta arası)
- Daha önce aşı olmayanlarda; 4 hafta ara ile 2 doz Tetanoz aşısı (biri Tdap) aşısı ve üçüncü doz 6-12 ay sonra uygulanmalıdır. İkinci doz doğumdan 15 gün önce uygulanmış olmalı
- Boğmacaya karşı korunma için gebelere 27-36 hafta arasında bir doz Tdap yapılmalıdır

## DOĞURGANLIK ÇAĞI (15- 49 YAŞ) /GEBE KADINLARDAKI TETANOZ AŞI TAKVİMİ

Doz sayısı	Uygulama zamanı	Koruma süresi
Td 1	Gebeliğin 4. ayında - İlk karşılaşmada	Yok
Td 2	Td 1'den en az 4 hafta sonra	1-3 yıl
Td 3	Td 2'den en az 6 ay sonra	5 yıl
Td 4	Td 3'den en az 1 yıl sonra ya da bir sonraki gebelikte	10 yıl
Td 5	Td 4'den en az 1 yıl sonra ya da bir sonraki gebelikte	Doğurganlık çağı boyunca

Hiç aşılanmamış gebelerin en az iki doz Td aşısı almaları sağlanmalıdır. İkinci doz doğumdan en az iki hafta önce tamamlanmalıdır. Yeterli süre sağlanamadıysa tek doz Td almış gebenin ve bebeğinin tetanoz hastalığı açısından risk altında olduğu dikkate alınmalıdır. Temiz doğum şartlarının sağlanması ve bebeğin göbek bakımının doğru yapılması daha da önem kazanmaktadır.

Td= Tetanoz (T) - Erişkin Tipi Difteri (d) Aşılıarı

DOĞUM Ö  
BAKIM YÖNET



**TABLE 3**

**Tetanus toxoid vaccination schedule for pregnant women and women of childbearing age with no or uncertain previous exposure to tetanus toxoid; tetanus toxoid and reduced-dose diphtheria toxoid; or diphtheria, pertussis and tetanus<sup>37</sup>**

Dose of TT or Td (according to card or history)	When to give	Expected duration of protection
1	At first contact or as early as possible in pregnancy	None
2	At least 4 wk after TT1	1–3 y
3	At least 6 mo after TT2 or during subsequent pregnancy	At least 5 y
4	At least 1 y after TT3 or during subsequent pregnancy	At least 10 y
5	At least 1 y after TT4 or during subsequent pregnancy	For all childbearing age years or possibly longer

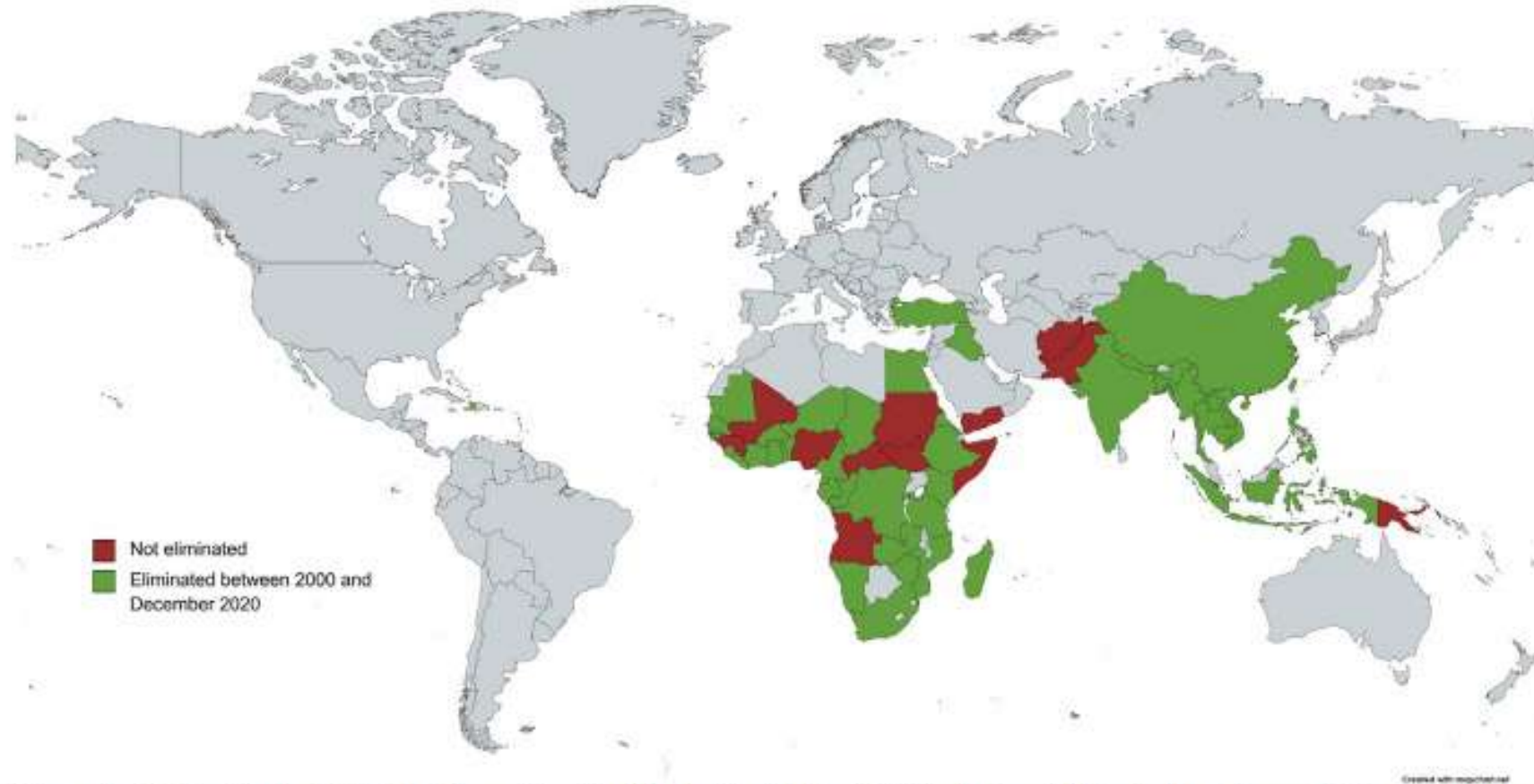
Table reproduced with permission from the World Health Organization.

TT, tetanus toxoid, Td, tetanus toxoid and reduced-dose diphtheria toxoid.

Etti. Maternal vaccination. *Am J Obstet Gynecol* 2021.

**FIGURE 3**

**Global elimination status of maternal and neonatal tetanus**



As of December 2020, 12 out of 59 "at-risk" countries identified by the WHO in 2000 had not yet eliminated the disease.<sup>40</sup> Figure reproduced with permission from the World Health Organization.

Countries shaded in green represents maternal and neonatal tetanus eliminated between 2000 and December 2020

Countries shaded in red represents maternal and neonatal tetanus not eliminated.

WHO, World Health Organization.

Etti. Maternal vaccination. *Am J Obstet Gynecol* 2021.

# Gebelikte Tdap aşısı

- Gebelikte Tdap yapılan annelerin bebeklerinin kordon kanında boğmaca antikor titreleri aşı yapılmayan annelerin bebeklerine göre daha yüksek
- Aşılı annelerin dört aylıktan küçük bebeklerinde boğmacaya bağlı hastane yatışlar azalmakta
- Ayrıca Tdap'a bağlı artmış fetal veya maternal yan etki bildirilmemiştir
- Koryoamnionit riski %20 artmış???
- Boğmacaya bağlı bebek ölümlerinin % 70 i 2 aylıktan küçük

Munoz FMSafety and immunogenicity of tetanus diphtheria and acellular pertussis (Tdap) immunization during pregnancy in mothers and infants: a randomized clinical trial. JAMA 2014



**Whooping  
cough** and  
pregnancy

Your questions  
answered on how  
to help protect  
your baby





# Gebelikte Tdap aşısı

- ABD ve UK - 2012'den bu yana rutin öneriliyor  
Herhangi bir trimesterde yapılabilir (3.trim tercihli)
- Daha erken aşılananlarda yeterli Ak transferi sağlanamıyor
- Anneleri doğumdan en az 7 gün önce aşılanan <3 aylık bebeklerin 9/10'u boğmacaya karşı korunmaktadır
- Her gebelikte aşı bir kez daha yapılmalı



T.C Sağlık Bakanlığı: Öneri yok

## Maternal Immunization Earlier in Pregnancy Maximizes Antibody Transfer and Expected Infant Seropositivity

**Sonuç:** İkinci trimester maternal Tdap bağışıklaması yenidoğan antikorlarını önemli ölçüde artırdı.

**%80 ikinci %55 üçüncü trimester**

İkinci trimesterden itibaren aşılamamanın önerilmesi, bağışıklamanın etkinliğini artıracaktır.

**Results.** We included 335 women (mean age, 31.0 ± 5.1 years; mean gestational age, 39.3 ± 1.3 GW) previously immunized with Tdap in the second (n = 122) or third (n = 213) trimester. Anti-PT and anti-FHA GMCs were higher following second- vs third-trimester immunization (PT: 57.1 EU/mL [95% confidence interval {CI}, 47.8–68.2] vs 31.1 EU/mL [95% CI, 25.7–37.7],  $P < .001$ ; FHA: 284.4 EU/mL [95% CI, 241.3–335.2] vs 140.2 EU/mL [95% CI, 115.3–170.3],  $P < .001$ ). The adjusted GMC ratios after second- vs third-trimester immunization differed significantly (PT: 1.9 [95% CI, 1.4–2.5]; FHA: 2.2 [95% CI, 1.7–3.0],  $P < .001$ ). Expected infant seropositivity rates reached 80% vs 55% following second- vs third-trimester immunization (adjusted odds ratio, 3.7 [95% CI, 2.1–6.5],  $P < .001$ ).

**Conclusions.** Early second-trimester maternal Tdap immunization significantly increased neonatal antibodies. Recommending immunization from the second trimester onward would widen the immunization opportunity window and could improve seroprotection.

**Keywords.** pertussis; maternal immunization; maternal antibodies; pregnancy; neonates.

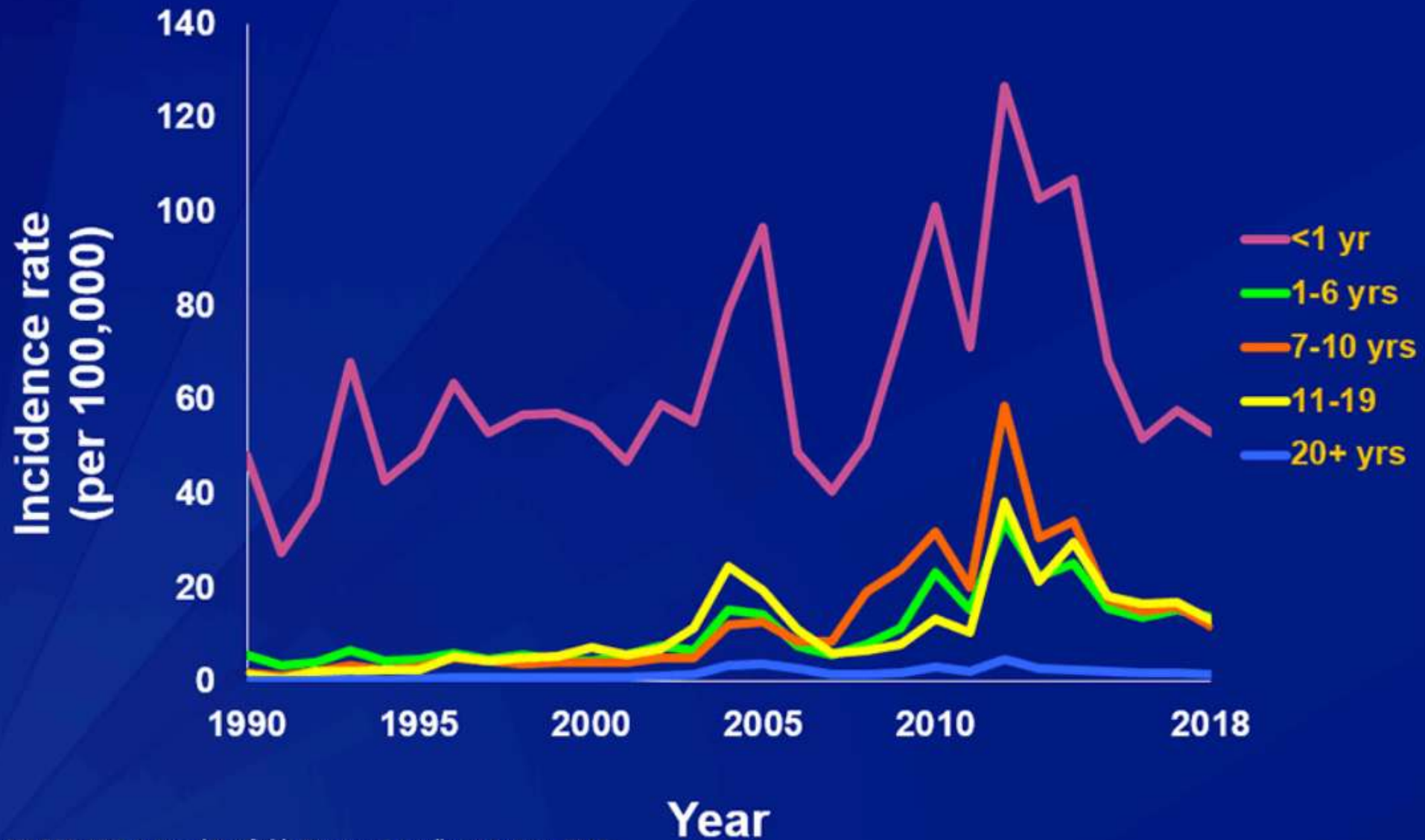
# Boğmaca aşısı gebeliğin hangi döneminde yapılmalı?

Effectiveness of Maternal Tdap Vaccination at Preventing Infant Pertussis, by Timing of Vaccination

	Cases		Controls		Multivariable VE <sup>a</sup> , % (95% CI)
Overall	240	8.1	240	16.8	64.3 (-13.8 - 88.8)
3 <sup>rd</sup> trimester	17	7.1	90	16.8	77.7 (48.3 - 90.4)
After pregnancy	90	37.5	174	32.5	4.9 (-49.3 - 39.5)

Geç 2. veya erken 3. trimesterde aşılanmanın anne boğmaca antikörlerinin bebeğe transplental transferini en fazla olmaktadır

## Reported pertussis incidence by age group: 1990-2018



SOURCE: CDC. National Notifiable Diseases Surveillance System, 2018.

## Notice to Readers:

### Final 2019 Reports of Notifiable Diseases

[https://wonder.cdc.gov/nndss/nndss\\_annual\\_tables\\_menu.asp](https://wonder.cdc.gov/nndss/nndss_annual_tables_menu.asp)

## Reported Pertussis Cases

2018: **15,609**

2019: **18,617**

### Reported Pertussis Cases and Percent Hospitalization by Age Group

Age	No. of Cases (% of total)	Age Inc /100,000	% Hospitalized by age**
< 6 mos	1447 (7.8)	76.5	40.9
6-11 mos	785 (4.2)	41.5	9.7
1-6 yrs	3889 (20.9)	16.3	2.4
7-10 yrs	2440 (13.1)	15.1	0.8
11-19 yrs	5673 (30.5)	15.0	1.1
20+ yrs	4380 (23.5)	1.8	7.7
Unknown Age	3 (0.0)	N/A	N/A
<b>Total</b>	<b>18,617 (100)</b>	<b>5.7*</b>	<b>6.2</b>

\*Total age incidence per 100,000 calculated from 18,614 cases with age reported.

\*\*Age-specific proportion of cases that were hospitalized, calculated from those with a known hospitalization status.

### Reported Pertussis Deaths

Age	Deaths*
Cases, aged < 1 yr	4
Cases, aged ≥ 1 yr	3
<b>Total</b>	<b>7†</b>

\*Deaths reported through NNDSS to CDC.

†3 of the 7 deaths were female.



## Maternal vaccination: a review of current evidence and recommendations

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<https://doi.org/10.1016/j.ajog.2021.10.041>

Melanie Etti, MRCP; Anna Calvert, MRCPC; Eva Galiza, MBBS; Suzy Lim, MD, PhD; Asma Khalil, MD;

**TABLE 1**

### Summary of vaccines recommended for administration during pregnancy in the United States

Vaccine Brand name (manufacturer)	Number of doses recommended	Recommended dosing schedule (gestation)	Contraindications
Influenza AFLURIA (Seqirus Pty. Ltd), Agriflu (Seqirus Inc), FLUAD (Seqirus Inc), Fluarix (GSK), Flublok (Protein Sciences Corporation), Flucelvax (Seqirus Inc), FluLaval (ID Biomedical Corporation of Quebec), FluMist, Fluvirin (Seqirus Vaccines Ltd), Fluzone (Sanofi Pasteur)	One dose	Vaccine can be administered during any trimester. Administration before the start of flu season is recommended	Contraindicated in individuals with a history of severe allergic reaction (eg, anaphylaxis) or life-threatening reaction to a previous dose of an influenza vaccine
Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis (Tdap) Adcel (Sanofi Pasteur), Boostrix (GSK)	One dose	Between 27 and 36 weeks' gestation (can be given earlier if indicated, eg, for wound management or pertussis outbreak) if no history of previous vaccination and dose not administered during pregnancy, give dose immediately postpartum	Contraindicated in individuals who have had a severe allergic reaction (eg, anaphylaxis) after a previous dose of a Tdap vaccine or who have a severe allergy to any vaccine component

# Özel Durumlarda Önerilen Aşılar



The American College of  
Obstetricians and Gynecologists  
WOMEN'S HEALTH CARE PHYSICIANS

## ACOG COMMITTEE OPINION

Number 741 • June 2018

Vaccine*	Indicated During Every Pregnancy	May Be Given During Pregnancy in Certain Populations	Contraindicated During Pregnancy	Can Be Initiated Postpartum or When Breastfeeding or Both
Inactivated influenza	X <sup>†,1,2</sup>			X <sup>‡</sup>
Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap)	X <sup>†,3,4</sup>			X <sup>‡</sup>
Pneumococcal vaccines		X <sup>§,5,6</sup>		X <sup>§,5,6</sup>
Meningococcal conjugate (MenACWY) and Meningococcal serogroup B		X <sup>  ,7</sup>		X <sup>  ,7</sup>
Hepatitis A		X <sup>¶,8</sup>		X <sup>¶,8</sup>
Hepatitis B		X <sup>¶,9,10</sup>		X <sup>¶,9,10</sup>
Human papillomavirus (HPV)**				X <sup>**,,11,12</sup>
Measles–mumps–rubella			X <sup>††,13,14</sup>	X <sup>††</sup>
Varicella			X <sup>††,13,15,16</sup>	X <sup>††</sup>

An "X" indicates that the vaccine can be given in this window. See the corresponding numbered footnote for details.

Inactivated influenza vaccination can be given in any trimester and should be given with each influenza season as soon as the vaccine is available. The Tdap vaccine is given at 27–36 weeks of gestation in each pregnancy, preferably as early in the 27–36-week window as possible. The Tdap vaccine should be given during each pregnancy in order to boost the maternal immune response and maximize the passive antibody transfer to the newborn. Women who did not receive Tdap during pregnancy (and have never received the Tdap vaccine) should be immunized once in the immediate postpartum period.<sup>1–3</sup>



## Özel Durumlarda Aşılama

- Kronik hastalık
- Endemik bölgeye seyahat zorunluluđu
- Yaşam şeklinden kaynaklanan artmış temas riski gibi nedenlerle gebeye rutin dışı aşı uygulamak gerekebilir
- Ancak; bilinen daha güvenli ve etkin bir korunma
- Tedavi olanađı varsa bunun tercih edilmesi
- Risk oluşturan hastalığın hasarı anne adayı ve bebek için kaçınılmaz ise aşının uygulanmalı
- Uygulanan bağışıklama gebe ve fetüs için uygun olmalı



# Gebelikte Özel Durumlarda Aşılama

- Hepatit A, Hepatit B,
- Pnömok,
- Meningok
- Kuduz
- Tifo
- Sarı humma

Enfeksiyonlarına karşı yüksek risk taşıyan gebe kadınlara bu hastalıklara karşı aşılar yapılabilir.



## Immunization Schedules

CDC > Schedules Home > For Health Care Providers



### Table 2. Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2021

Always make recommendations by determining needed vaccines based on age ([Table 1](#)), assessing for medical conditions and other indications ([Table 2](#)), and reviewing special situations ([Notes](#)).

[Get Email Updates](#)

Vaccine	Pregnancy
<a href="#">IIV</a> ⓘ or <a href="#">RIV4</a>	
or <a href="#">LAIV4</a> ⓘ	
<a href="#">Tdap</a> or <a href="#">Td</a> ⓘ	1 dose Tdap each pregnancy
<a href="#">MMR</a> ⓘ	NOT RECOMMENDED*

<a href="#">MenACWY</a> ⓘ	
<a href="#">MenB</a> ⓘ	PRECAUTION
<a href="#">Hib</a> ⓘ	

**Legend**

- Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection
- Recommended vaccination for adults with an additional risk factor or another indication
- Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction
- Recommended vaccination based on shared clinical decision-making
- Not recommended/contraindicated—vaccine should not be administered. \*Vaccinate after pregnancy.
- No recommendation/Not applicable

<a href="#">RZV</a> ⓘ	
<a href="#">HPV</a> ⓘ	NOT RECOMMENDED*
<a href="#">PCV13</a> ⓘ	
<a href="#">PPSV23</a> ⓘ	
<a href="#">HepA</a> ⓘ	
<a href="#">HepB</a> ⓘ	

# Pnömokok aşısı

Legend					
Recommended vaccination for adults who meet	Recommended vaccination for adults with an	Precaution—vaccination might be indicated if	Recommended vaccination based on shared clinical	Not recommended/contraindicated—	No recommendation/Not applicable



- Gebeye pnömokok aşısı yapılacaksa PPSV23 tercih edilmeli
- İdeali gebelik öncesinde uygulanmasıdır; ancak zorunlu durumlarda gebelikte de yapılabilir
- Birinci trimesterdeki güvenilirliği tam bilinmediğinden 2-3 trimesterde yapılması önerilir
- Zorunlu olarak ilk trimesterde uygulanan kişilerde yan etki bildirilmemiştir

Table 2. Recommended Adult Immunization Schedule by

- Elektif şartlarda tıbbi işlemlerden iki hafta önce yapılmalı,
- Acil splenektomi gerektiren durumlarda ameliyat sonrası 14. günden sonra
- Hayvan deneyleri güvenilir ancak konjuge aşılarda herhangi bir öneride bulunmamıştır

# Meningokok aşısı

- Meningokok hastalık riski varlığında MenACYW güvenli görünmekte
- Men B risk-fayda analizi değerlendirilmeli

CDC Centers for Disease Control and Prevention  
CDC 24/7 Saving Lives. Protecting People™

Immunization Schedules  
CDC - Schedules Home - For Health Care Providers

**Table 2. Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2021**  
Always make recommendations by determining needed vaccines based on age (Table 1), assessing for medical conditions and other indications (Table 2), and reviewing special situations (Notes). [Get Email Updates](#)

Vaccine	Pregnancy
<a href="#">MenACWY</a> i	
<a href="#">MenB</a> i	PRECAUTION

# Hepatit B



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WOMEN'S HEALTH CARE PHYSICIANS

- Anne adayı ve fetüs için bilinen bir yan etkisi gösterilmemiştir, güvenli
- Gebe kalmadan önce aşılama serisi başlamış veya Hepatit B ile bulaş riski varsa üç doza tamamlanmak üzere uygulanabilir

#Hepatitis B vaccination is recommended for women who are identified as being at risk of hepatitis B infection during pregnancy (eg, women who have household contacts or sex partners who are hepatitis B surface antigen–positive; have more than one sex partner during the previous 6 months; have been evaluated or treated for a sexually transmitted infection; are current or recent injection-drug users; have chronic liver disease; have HIV infection; or have traveled to certain countries). Any woman who wants to be protected from hepatitis B or has an indication for use may receive the vaccine during pregnancy and the postpartum period. Pregnant women at risk of hepatitis B infection during pregnancy should be counseled concerning other methods to prevent hepatitis B infection.<sup>1,9</sup>

- HBsAg pozitif olan annenin bebeğine doğar doğmaz uygulanması vertikal geçişi önlemekte

## Farklı bir şema

<25 hafta, Hepatit B için  
yüksek risk taşıyan  
gebelerde  
0.1.4. aylarda uygulandığında  
3. dozdan sonra koruyuculuk  
%90, YE'de artış yok

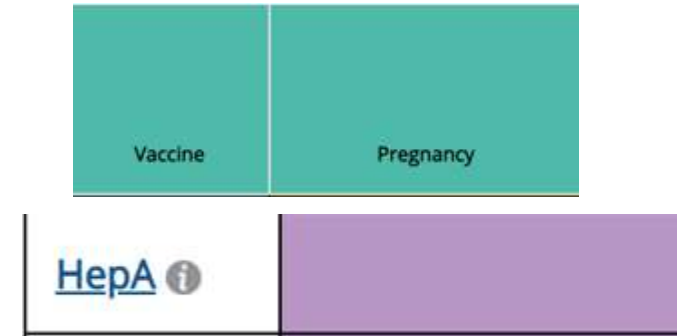
# Hepatit A

Prevention of Hepatitis A Virus Infection in the United States:  
Recommendations of the Advisory Committee on  
Immunization Practices, 2020

*Recommendations and Reports / July 3, 2020 / 69(5);1-38*

Risk altında olduğu belirlenen hamile kadınların aşılınması  
Uluslararası seyahat edenler,  
Enjeksiyon veya enjeksiyon dışı uyuşturucu kullanan kişiler  
Mesleki enfeksiyon riski taşıyan kişiler  
Uluslararası bir evlat edinen kişiyle veya evsiz kalan kişilerle yakın kişisel temas kurmak  
Ciddi HAV enfeksiyon riski (Kronik karaciğer hastalığı)

- Gebelerde akut hepatit A
  - Erken doğum
  - Mekonyum peritoniti
  - Fetal asit
  - Polihidroamnios



# Kuduz



Full length article

Vaccination in pregnancy – The when, what and how?

Nimra Dad, Sara Rubmaid, Mancha Mullik\*



İnaktive Kuduz aşısı temas sonrası 0,3,7,14 günlerde uygulanmalı  
Gerekirse RIG gebede kullanılabilir  
Temas öncesi aşıları olanlarda 0,3 günlerde 2 doz aşı önerilir  
Temas öncesi aşılanılarda RIG uygulanmasına gerek yok  
Kuduz için yüksek temas riski olanlara temas öncesi profilaksi uygulanabilir

Maltezou, Vaccination programs for pregnant women in Europe, 2021. Vaccine 2021

## Postexposure Prophylaxis for Previously Immunized Individuals

Treatment	Regimen
Wound cleansing	All postexposure prophylaxis should begin with immediate thorough cleansing of all wounds with soap and water. If available, a virucidal agent such as povidine-iodine solution should be used to irrigate the wounds.
RIG	RIG should not be administered.
Vaccine	HDCV or PCECV 1.0 mL, IM (deltoid area), one each on days 0 and 3.



## 4. Vaccinations for Pregnant Women in Special Circumstances

### 4.1. Vaccination against COVID-19

Review

## Comprehensive Overview of Vaccination during Pregnancy in Europe

Anca Angela Simionescu <sup>1,2</sup>, Anca Streinu-Cercel <sup>1,3</sup>, Florin-Dan Poiescu <sup>1,4,\*</sup>

COVID-19 seyirinde hamile kadınlar ciddi veya kritik seyir riski  
Gebelik ve yenidoğan etkilenebilir  
Ölüm ve erken doğum gelişebilir  
Şiddetli neonatal veya perinatal morbidite ve mortalite  
Eklamsi, erken doğum, ölü doğum gelişebilir

Ağır klinik seyirli gebelerde sezaryen doğumu, postpartum kanama,  
hipertansif gestasyonel bozukluklar ve erken doğum daha sık

CoV-2 antibodies. The mRNA vaccines induce a robust humoral immune response in both pregnant and lactating women. Moreover, the antibodies generated by the vaccine are detected in umbilical cord blood and breast milk [82–87]. The adverse event profile of COVID-19 vaccines appears to be similar in pregnant and non-pregnant women [88].





ELSEVIER

Full length article

Vaccination in pregnancy – The when, what and how?

WHO, European Medicines Agency, UK Joint Committee on Vaccination and Immunization, CDC , doğrudan COVID 19 aşılarını tavsiye eder veya maruz kalma/enfeksiyon riski taşıyan kadınlara -altta yatan herhangi bir komorbiditesi olan kadınlara gebelik sırasında düşünülebileceğini belirtir.

ACOG gebelerin ulaşabildiği aşı ile aşılanmalarını öneriyor  
Pfizer ve Moderna Aşıları 2 doz uygulanabilir  
Janssen 1 doz uygulanabilir

Published: February 2, 2022

RESEARCH ARTICLE

## mRNA Covid-19 vaccines in pregnancy: A systematic review

Nando Reza Pratama<sup>1</sup>, Ifan Ali Wafa<sup>1</sup>, David Setyo Budi<sup>1</sup>, Manesha Putra<sup>2</sup>,  
Muzakkar Fauzan Widiyasa<sup>3</sup>, Citra Nur Diah Kusuma Wati<sup>4,5</sup>

- mRNA aşıları, özellikle Pfizer-BioNTech ve Moderna aşıları SARS-CoV-2 enfeksiyon gelişim riskini azaltabilir.
- Hamile kadınlar ve onların fetüsleri için antikor yanıtını indükleyebilir.
- Daha güçlü maternal ve fetal antikor yanıtları için hamile kadınlar iki doz aşılanmalı

Aşılama gebelik, doğum ve neonotal süreci etkilemez

## COVID-19



Your Health

Vaccines

Cases & Data

Work & School

Healthcare Workers

Health Depts

Sc

🏠 Vaccines

Your Vaccination

### COVID-19 Vaccines While Pregnant or Breastfeeding

# People who are Pregnant

COVID-19 vaccination is recommended for people who are pregnant. CDC recommends that people who are starting their vaccine series or getting a booster dose get either Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines), but the J&J/Janssen COVID-19 vaccine may be considered [in some situations](#).



# GEBELİKTE COVID AŞISI

Benefits of COVID Vaccination during Pregnancy



Public Health England

Pregnancy

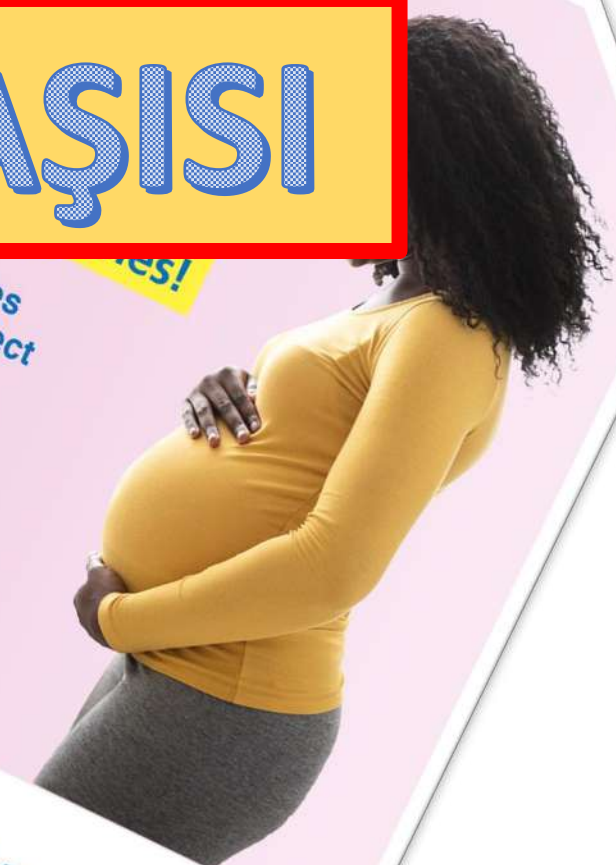
Protect yourself and your baby from COVID-19. Get vaccinated.



[cdc.gov/coronavirus](https://www.cdc.gov/coronavirus)



...doses  
...born baby.  
...infection is currently  
...and can be serious  
...women.  
...pregnant women  
...vaccinated in the



...hs.uk/conditions/  
...s-vaccination/  
...pointment.  
...or pop up

COVID-19 imm  
Helping to prote

## Prenatal maternal COVID-19 vaccination and pregnancy outcomes

Tamar Wainstock<sup>a</sup>, Israel Yoles<sup>b</sup>, Ruslan Sergienko<sup>a</sup>, Eyal Sheiner<sup>b</sup>

913'ü (%20,8) gebelikte aşılanmış olmak üzere toplam 4.399 kadın katılmış

Tüm aşılar ikinci veya üçüncü trimesterde yapılmış

Aşısız kadınlarla karşılaştırıldığında, aşıli kadınlar daha yaşlıydı, doğurganlık tedavilerini takiben gebe kalma olasılıkları daha yüksekti, yeterli doğum öncesi bakıma sahipti ve

Yenidoğum mortalitesi düşüktü. Prenatal maternal COVID-19 aşısının gebelik seyri ve sonuçları

üzerinde olumsuz bir etkisi yoktur

Bu bulgular, hamile kadınların ve sağlık hizmeti sağlayıcılarının aşılama konusunda bilinçli kararlar vermelerine yardımcı olabilir

Med

CO  
rea  
du

News

Yaklaşık **65.000 gebe** kadını içeren çeşitli çalışmaların ayrıntılı bir incelemesi sonucu; mRNA COVID-19 aşısını takiben gebelik komplikasyonları, düşük, erken doğum veya **istenmeyen etkiler açısından herhangi bir artış belirtisi görülmedi**

JAMA Pediatrics | [Original Investigation](#)

# Association of BNT162b2 COVID-19 Vaccination During Pregnancy With Neonatal and Early Infant Outcomes

Inbal Goldshtein, PhD; David M. Steinberg, PhD; Jacob Kuint, MD; Gabriel Chodick, PhD; Yaakov Segal, MD; Shirley Shapiro Ben David, MD; Amir Ben-Tov, MD

**IMPORTANCE** Pregnant women were excluded from the BNT162b2 messenger RNA (mRNA) COVID-19 vaccine (Pfizer-BioNTech) preauthorization trial. Therefore, observational data on vaccine safety for prenatally exposed newborns are critical to inform recommendations on maternal immunization.

**OBJECTIVE** To examine whether BNT162b2 mRNA vaccination during pregnancy is associated

[+ Supplemental content](#)

*JAMA Pediatr.* Published online February 10, 2022.

24.288  
Yenidoğan

16697 anne  
gebelikte covid  
19 aşılanmış

7591 anne  
aşılanmamış

2135 ilk  
trimesterde

9364 ikinci  
5199 üçüncü  
Trimesterde

1078 Gebelikte  
covid inf geçirmiş

2241 Gebelikte  
covid inf geçirmiş

Erken doğum

SGA

Neonatal hospitalizasyon

Postneonatal hospitalizasyon

Kongenital anomali

YD mortalitesi

....açasından

**Annesi gebelikte covid aşısı  
olan ve olmayanlar arasında**

**FARK YOK**



Nonreplicating viral vector	Oxford-AstraZeneca (AZD1222)	Modified chimpanzee adenovirus (replication deficient) containing the gene encoding the spike (S) protein	Pregnancies that occurred in clinical trials were recorded and followed up until 3 months after birth. Compared with women who received the control vaccine, there was no increased risk of miscarriage and no	No previous studies among pregnant women. However, adenovirus-vectored Zika vaccine studies in pregnant mice did not identify any safety signals
Protein subunit	Novavax (NVX-Cov2373)	Full length recombinant spike (S) protein nanoparticle administered with a saponin-based adjuvant (Matrix-M)	No direct safety data available	Recombinant vaccines are generally considered safe for use during pregnancy Safety of saponin-based adjuvant in pregnancy unknown
	Sputnik V (Gam-COVID-Vac)	protein Combined recombinant adenovirus-based vaccine (rAd5 and rAd26), both containing the gene encoding the full-length spike (S) protein		

## Maternal vaccination: a review of current evidence and recommendations

2021

Inactivated whole virus	Sinovac (CoronaVac)	Inactivated whole virus particle containing aluminum hydroxide adjuvant	No direct safety data available	Inactivated vaccines generally considered safe for use during pregnancy.
	Sinopharm (BBIBP-CorV)	Inactivated whole virus particle containing aluminum hydroxide adjuvant		Aluminum hydroxide (used in human papillomavirus vaccine) and CpG 1018 (used in hepatitis B virus vaccine adjuvants) both considered safe for use during pregnancy
	Valneva (VLA2001)	Inactivated whole virus particle containing aluminum hydroxide and CpG 1018 adjuvants		Safety of the Alhydroxyquim-II adjuvant unknown in pregnancy
	Bharat Biotech (BBV152)	Inactivated whole virus particle containing Alhydroxyquim-II adjuvant		

Adapted from Kalafat et al.<sup>21</sup>

*mRNA*, messenger RNA.

Etti. *Maternal vaccination. Am J Obstet Gynecol* 2021.

*Review*

## Comprehensive Overview of Vaccination during Pregnancy in Europe

CDC; **Hib** aşı önerisi özel durumlarda  
Elektif splenektomi.... 14 gün  
öncesinde,  
Fonksiyonel ya da anatomik  
asplenide aşısız  
trimester

Gebede tifo aşısı hakkında yeterli veri yok  
Endemik bölgeye seyahat varlığında inaktif kapsular (Typhim Vi)

Sarı Humma canlı atenüe aşı  
Kaçınılmaz seyahat varlığında faydalar /risk değerlendirilmeli  
ABD'de gebe askerlerde aşının zayıf olumsuz etkisi saptandı  
Seyahatten 10 gün önce 1 doz

## Gebelikte kontrendike olan aşılar

MMR

BCG

Varisella

Canlı İnfluenza ve polio  
aşıları

# Gebelikte kontraendike olan aşılar

### Maternal vaccination: a review of current evidence and recommendations

2021

Melanie Etti, MRCP; Anna Calvert, MRCPCH; Eva Galiza, MBBS; Suzy Lim, MD, PhD; Asma Khalil, MD; Kirsty Le Doare, PhD; Paul T. Heath, FRCPC

**TABLE 4**  
**Vaccines contraindicated during pregnancy**

Vaccine (platform)	Reason for contraindication	Safety considerations
BCG (live attenuated virus)	Contains live culture preparation of the BCG strain of <i>Mycobacterium bovis</i>	No harmful effects have been observed in pregnant women. However, safety in pregnancy has not been formally evaluated. <sup>162</sup>
Human papilloma virus (recombinant virus-like particle)	No safety data available to support use in pregnancy. Not recommended by the CDC for administration during pregnancy.	No evidence of increased risk of adverse pregnancy or fetal outcomes following administration during pregnancy. <sup>163,164</sup> If inadvertent administration during pregnancy, delay remaining doses until after pregnancy.
Measles, mumps, and rubella (live attenuated virus)	Contains live attenuated mumps, measles, and rubella viruses	No evidence of increased risk of adverse pregnancy or fetal outcomes (including congenital rubella syndrome) following administration during pregnancy. <sup>98</sup> Pregnancy testing is not recommended before vaccine administration of vaccine. However, recipients are advised not to become pregnant for at least 28 days after vaccine dose. <sup>20,47</sup>
Varicella (live attenuated virus)	Contains live attenuated varicella-zoster virus.	Data from Merck/CDC Pregnancy Registry have not identified any increased risk of congenital varicella syndrome. <sup>20,165</sup>
Zoster (recombinant glycoprotein)	No safety data available to support use in pregnancy. Not recommended by CDC for administration during pregnancy.	Data from Merck/CDC Pregnancy Registry has not identified any increased risk of congenital varicella syndrome. <sup>20</sup>

BCG, Bacillus Calmette-Guérin; CDC, Centers for Disease Control and Prevention.

Etti. Maternal vaccination. Am J Obstet Gynecol 2021.

Vaccine*	Indicated During Every Pregnancy	May Be Given During Pregnancy in Certain Populations	Contraindicated During Pregnancy	Can Be Initiated Postpartum or When Breastfeeding or Both
Inactivated influenza	X <sup>†,1,2</sup>			X <sup>‡</sup>
Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap)	X <sup>†,3,4</sup>			X <sup>‡</sup>
Pneumococcal vaccines		X <sup>§,5,6</sup>		X <sup>§,5,6</sup>
Meningococcal conjugate (MenACWY) and Meningococcal serogroup B		X <sup>  ,7</sup>		X <sup>  ,7</sup>
Hepatitis A		X <sup>¶,8</sup>		X <sup>¶,8</sup>
Hepatitis B		X <sup>#,9,10</sup>		X <sup>#,9,10</sup>
Human papillomavirus (HPV)**				X <sup>**,,11,12</sup>
Measles–mumps–rubella			X <sup>††,13,14</sup>	X <sup>††</sup>
Varicella			X <sup>††,13,15,16</sup>	X <sup>††</sup>

\*An "X" indicates that the vaccine can be given in this window. See the corresponding numbered footnote for details.

<sup>†</sup>Inactivated influenza vaccination can be given in any trimester and should be given with each influenza season as soon as the vaccine is available. The Tdap vaccine is given at 27–36 weeks of gestation in each pregnancy, preferably as early in the 27–36-week window as possible. The Tdap vaccine should be given during each pregnancy in order to boost the maternal immune response and maximize the passive antibody transfer to the newborn. Women who did not receive Tdap during pregnancy (and have never received the Tdap vaccine) should be immunized once in the immediate postpartum period.<sup>1–3</sup>

## SONUÇ

Doğurganlık yaşındaki kadınlarda gebelikten en az 1 ay önce tüm klinik endikasyonu olan aşılar tamamlanmalı

İnaktif influenza ve Tdap aşıları gebelikte de güvenle uygulanabilir

Canlı aşılardan gebelik süresince kaçınılmalı



# Teşekkürler