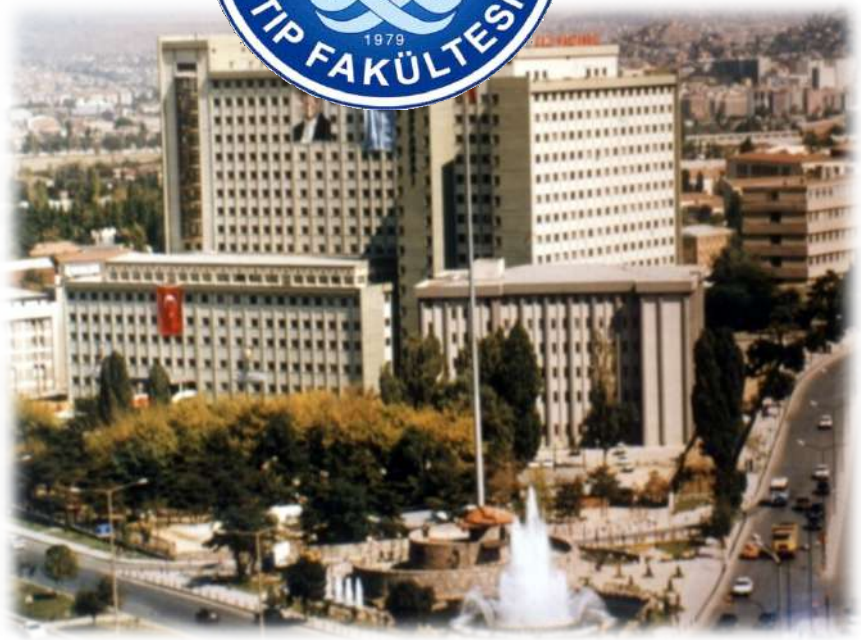
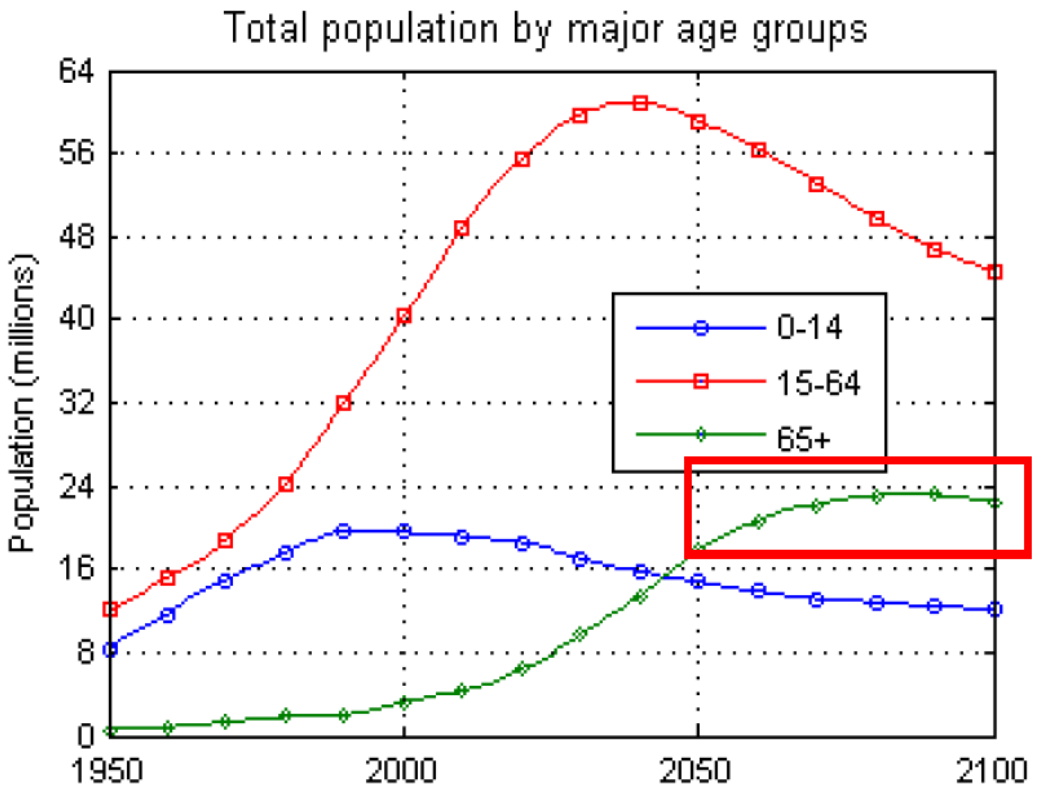
YAŞLILIKTA BAĞIŞIKLAMA



esin şenol

M.Ö. 3000	18 y.
M.Ö. 275	26 y.
M.S. 1900	49 y.
M.S. 1980	76 y.
M.S. 2002	85 y.
M.S. 2020	90 y.

Türkiye için nüfusun yıllara göre tahmini dağılımı

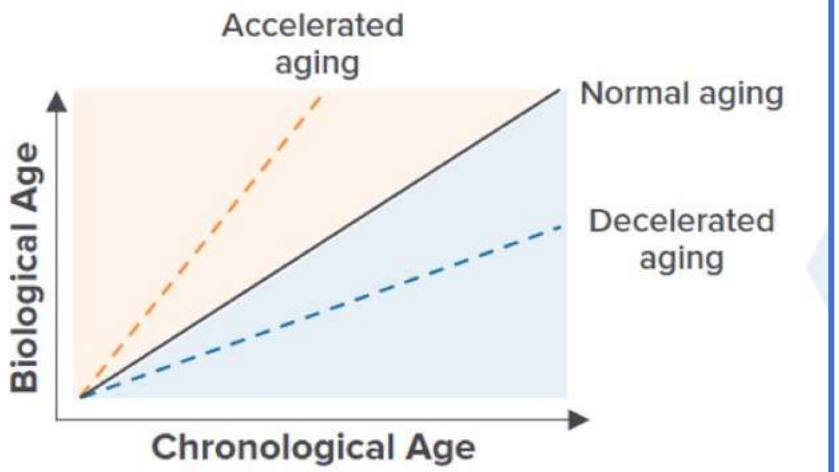


Kaynak: United Nations, Department of Economic and Social Affairs, Population Division (2011): World Population Prospects: The 2010 Revision. New York

- NÜFUS
- YOKSULLUK
- YAŞLILIK

KRONOLOJİK VE BİYOLOJİK YAŞ

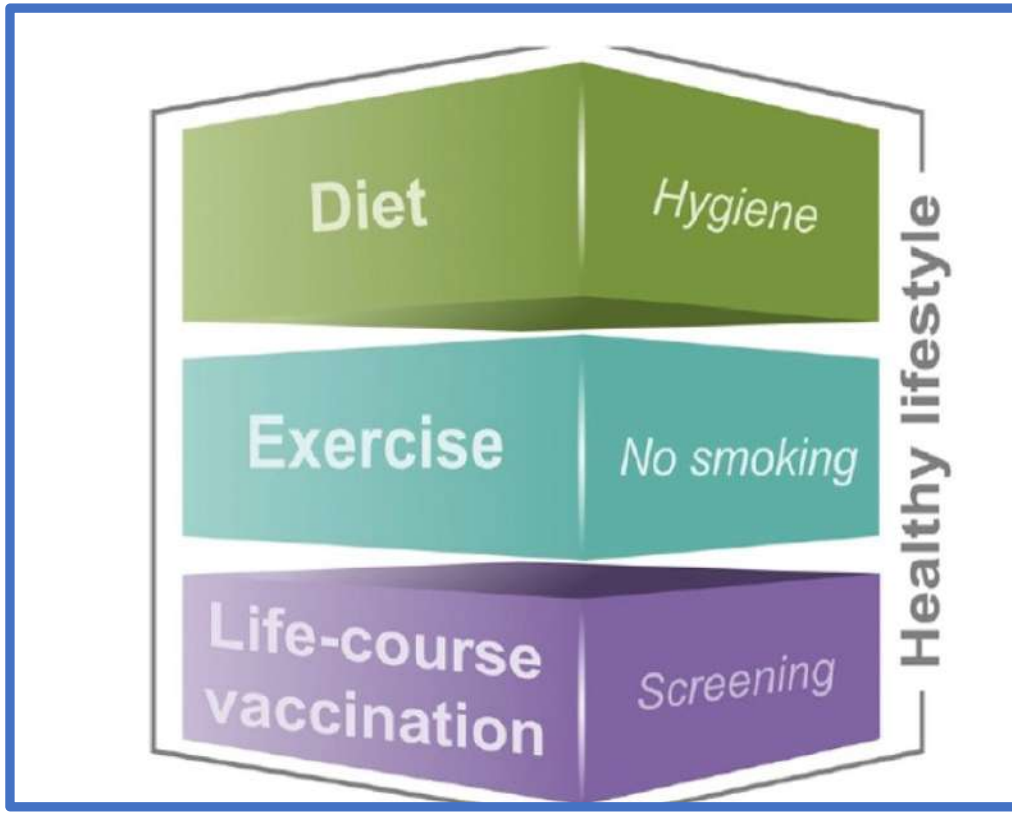
IMMUN(SENESCENSE)YAŞLANMA



IMMUN(FITNESS) ESNEKLİK

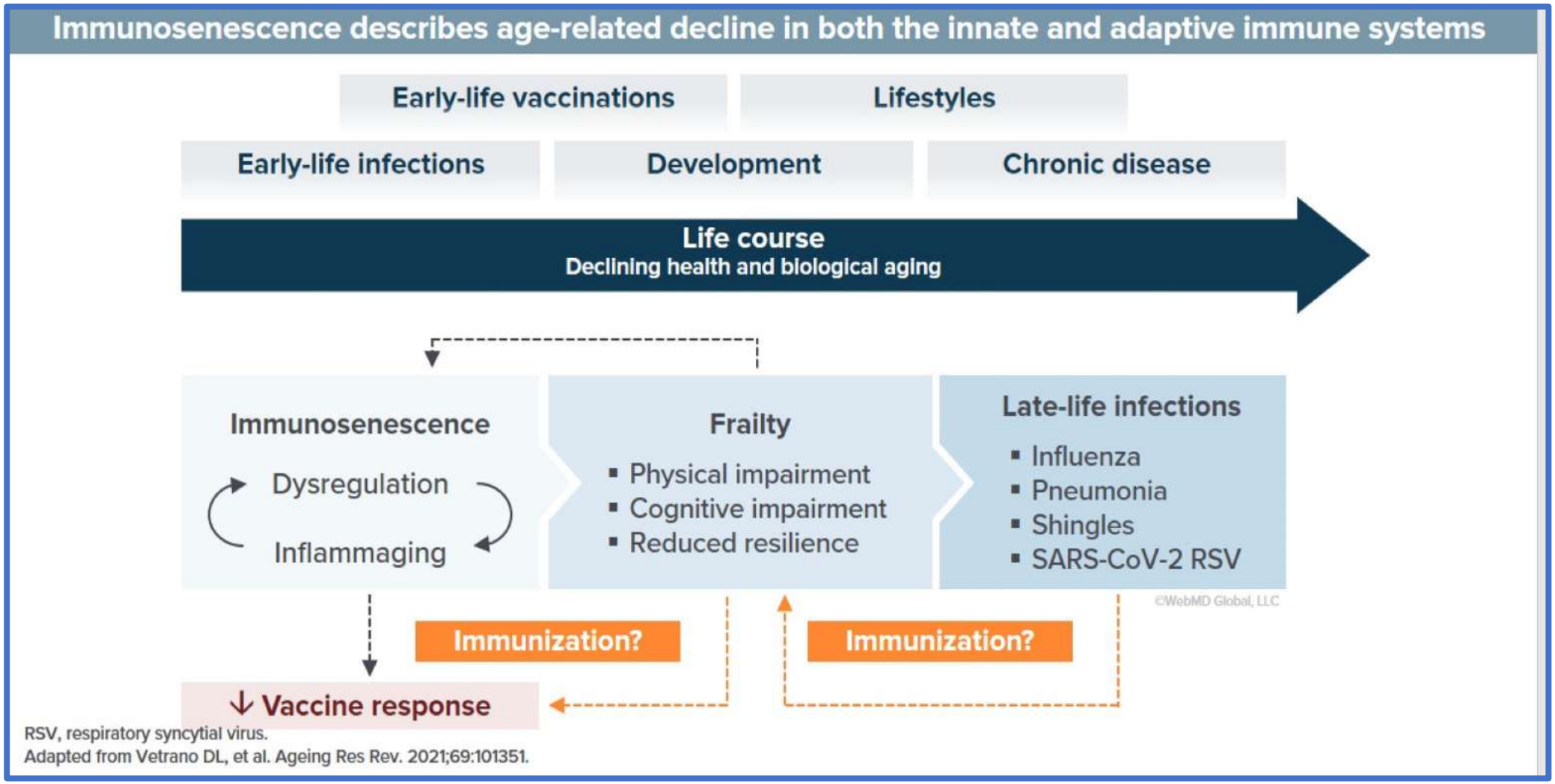
Vaccines contribute positively to immune fitness:

- Ability to adapt to external challenges
- Capacity to return to homeostasis after an external challenge (immune system resilience)
- Training the innate and adaptive immunity (impact beyond the disease targeted)



Laupèze B, et al. NPJ Vaccines. 2021;6:93.

İNFLAMAGİNG

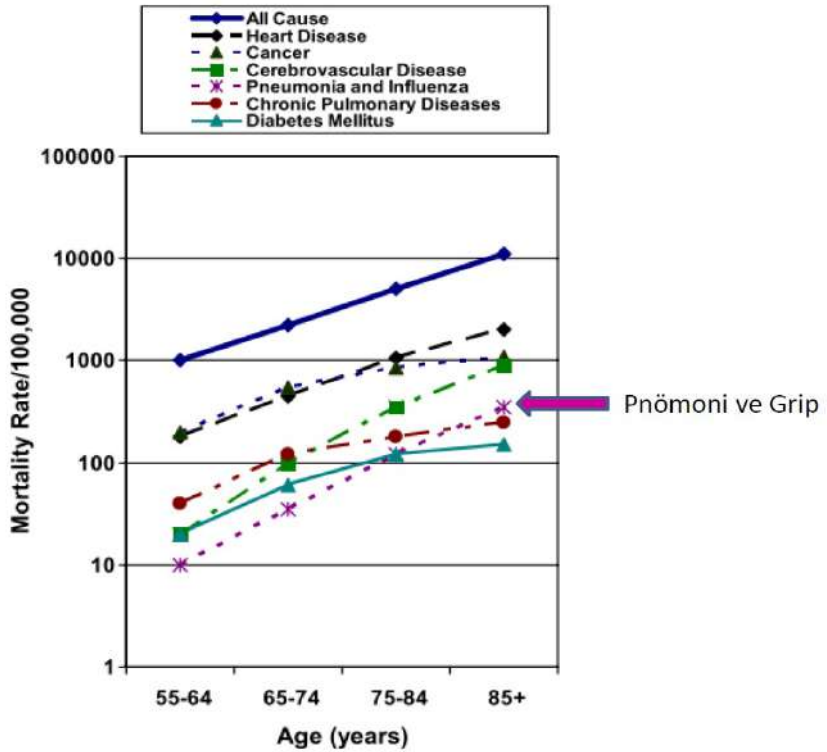


65 YAŞ VE ÜZERİNDE ÖLÜM NEDENLERİ

1/3 Enfeksiyon

1/3 Kardiyak nedenler

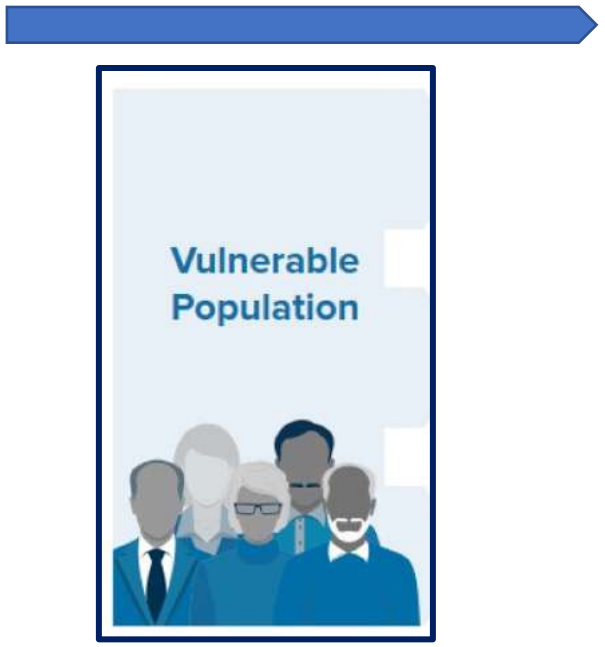
1/3 Diğer nedenler



YAŞLANMAK İNFEKSİYÖZ BİR SÜREÇ

YAŞLILAR AŞI İLE ÖNLENEBİLİR SOLUNUM YOLU İNFEKSİYONLARINA DUYARLIDIR

- İMMUNOSENESANS
- KOMORBİDİTELER
- KIRILGANLIK



HASTANAYE YATIŞ RİSKİ

ARTMIŞ

MORTALİTESİ ARTMIŞ

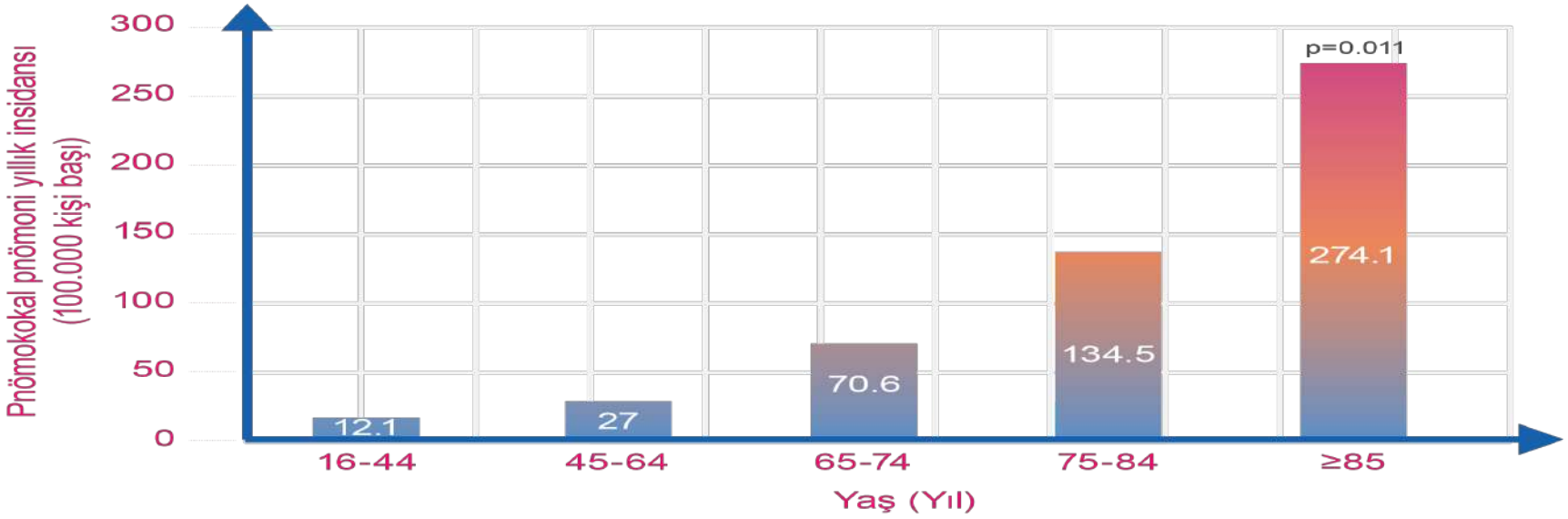
HASAR RİSKİ ARTMIŞ

PNÖMOKOKSİK PNÖMONİDE MORTALİTE VE YAŞ

YAŞ	MORTALİTE
40 ve altı	%6
40-59	%18
60-79	%45
80 ve üstü	%64

Pnömokokal pnömoni insidansı yaşla beraber artar. [1]

Yaş gruplarına göre pnömokokal pnömoni oranı (İngiltere, 2008-20101)



Grafik Referans 1 Tablo 3'ten uyarlanmıştır.

Bu çalışma prospektif, gözlemsel bir kohort çalışması olup, İngiltere'de geniş ölçekli bir eğitim araştırma hastanesinde yürütülmüştür.[1]

1. Bewick T et al. Serotype prevalence in adults hospitalised with pneumococcal non-invasive community-acquired pneumonia. Thorax 2012;67:540e545.

Incidence and mortality rates of invasive pneumococcal disease in the United States, 2010 — Active Bacterial Core Surveillance (ABCs) report, Emerging Infections Program Network

Age (years)	Cases		Deaths	
	Number	(Rate*)	Number	(Rate*)
<1	142	(34.2)	1	(0.24)
1	112	(26.6)	1	(0.24)
2 to 4	171	(13.1)	1	(0.08)
5 to 17	111	(2.2)	1	(0.02)
18 to 34	260	(3.8)	18	(0.26)
35 to 49	670	(10.5)	43	(0.68)
50 to 64	1064	(18.8)	103	(1.82)
≥65	1292	(36.4)	199	(5.61)
Total:	**3822**	**(12.8)**	**367**	**(1.23)**

* Cases or deaths per 100,000 population for ABCs areas, which represent nearly 30,000,000 persons in certain counties in 10 states in the United States.

Reproduced from: Centers for Disease Control and Prevention. Active Bacterial Core Surveillance (ABCs) report, Emerging Infections Program Network Streptococcus pneumoniae, 2010. Available at: http://www.cdc.gov/abcs/reports-findings/survreports/spneu10-orig.pdf (Accessed March 21, 2013).

İNFLUENZA

Ölüm hızı;
yüksek riskli gruplarda -%2.8'e kadar ulaşmaktadır.

<65 yaş altı; 0.1-6.4 /100.000
>65 -74; 2.9-44.0/100.000
>75 yaş; 17.9- 223.5/100.000

Burden of RSV Disease in Older Adults in the United States

Groups at high risk of severe illness[a]

- **Pediatric** and **older adults (> 65 years of age)**
- Immunocompromised or chronic medical conditions

Mortality[b]

- Up to **78%** of deaths are in adults ≥ 65 years of age

Disease burden is underestimated[c]

- Expected to increase considering the aging population

Estimated Annual RSV Cases in Adults Aged ≥ 65 years

a. CDC. 2022. Accessed October 7, 2022. https://www.cdc.gov/rsv/clinical/index.html; b. Thompson WW. JAMA. 2003;289:179-186;
c. CDC. June 23, 2022. Accessed October 10, 2022. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2022-06-22-23/04-rsv-havers-508.pdf; d. Choi Y, et al. Influenza Other Respir Viruses. 2022;16:151-158.

Risk Factors for Hospitalization With RSV

Risk Factor	Odds Ratio	*P* Value
Male	2.4	.17
Pulmonary disease	4.0	.03
Coronary artery disease	1.0	NS
Congestive heart failure	1.9	NS
Diabetes	0.9	NS
Functional score per integer increase in IADL score	1.7	.001
Serum antibody neutralizing titer < 10 $\log_2$	5.9	.006

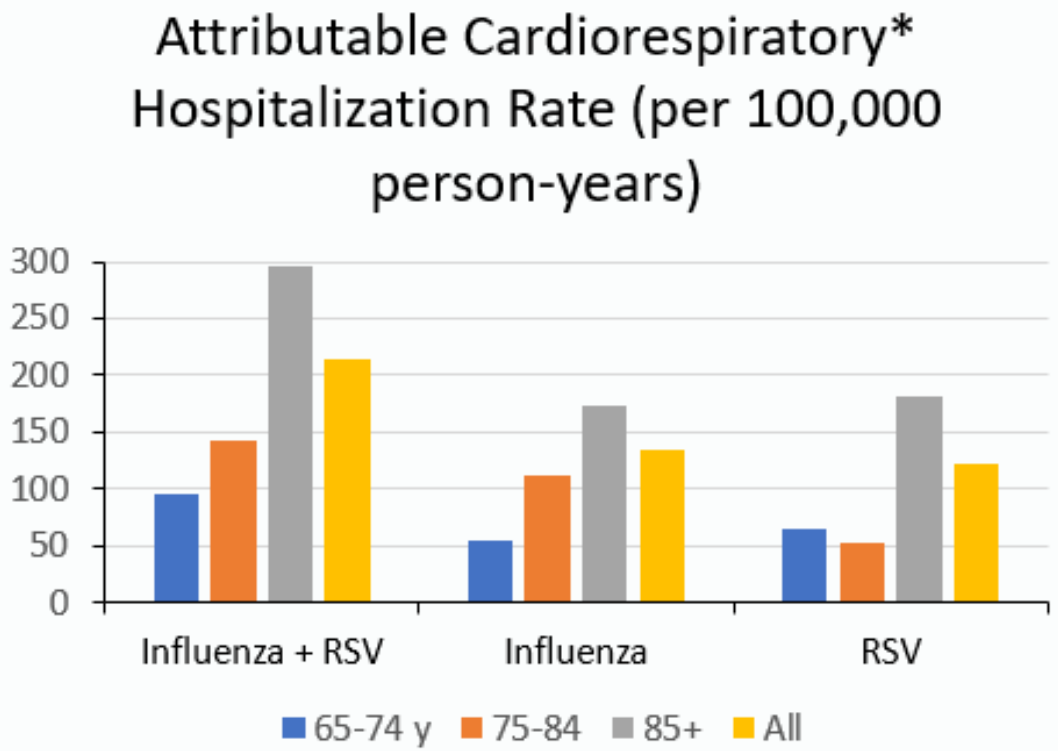
Assessing the impact on VPD outcomes: frailty and comorbidities should always be considered

NS, nonsignificant.

Walsh EE, et al. J Infect Dis. 2004;189:233-238.

RSV Is an Important Cause of Cardiorespiratory Hospitalization

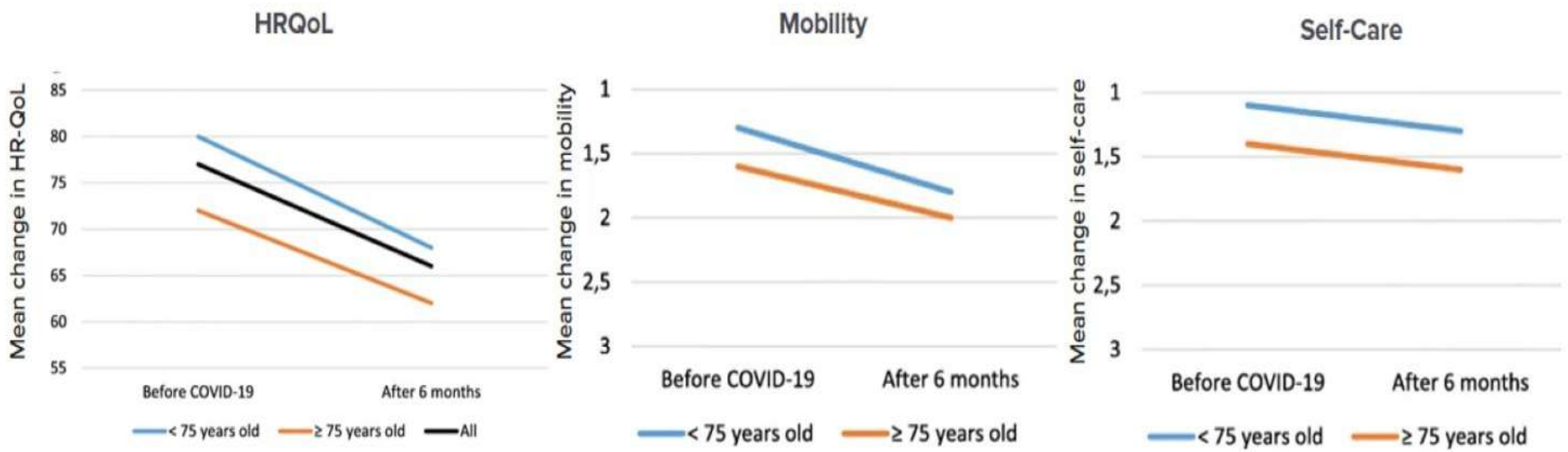
- Retrospective analysis for 6 respiratory seasons (2011-2017)
  - Medicare Provider Analysis and Review inpatient claims and Minimum Data Set
- Long-stay (≥100 d) residents of long-term care facilities age ≥65 y



*ICD-9-CM codes 390.XX-459.XX; ICD-10-CM codes 100.XX-199.XX; ICD-9-CM codes 460.XX-519.XX; ICD-10-CM codes J00.XX-J08.XX; J12.XX-J99.XX

Bosco E, et al. *JAMA Netw Open*. 2021;4(6):e2111806.

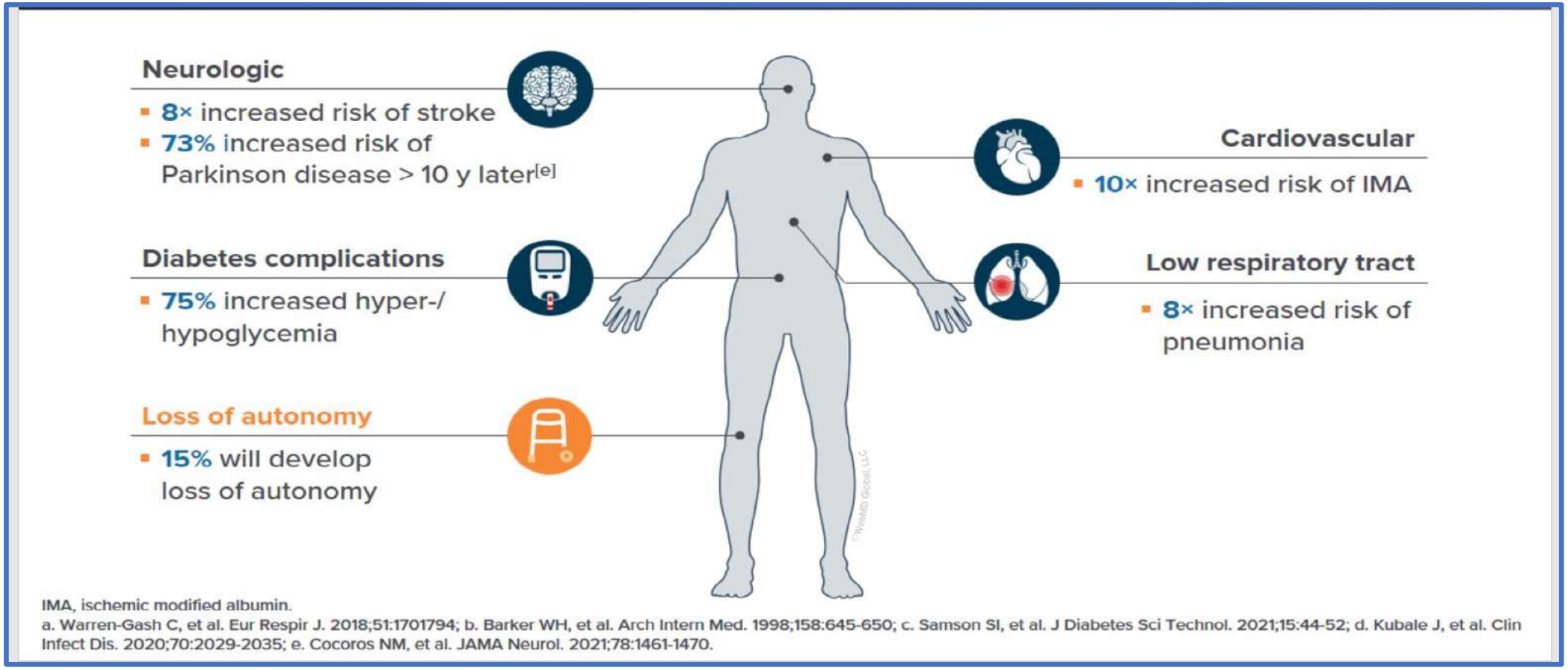
Older patients hospitalized with COVID-19 may experience reduced functionality after discharge



HRQoL, health-related quality of life.

Walle-Hansen MM, et al. BMC Geriatr. 2021;21:199.

İNFLUENZANIN SOLUNUM SİSTEMİ DIŞINDAKİ BULGULARI

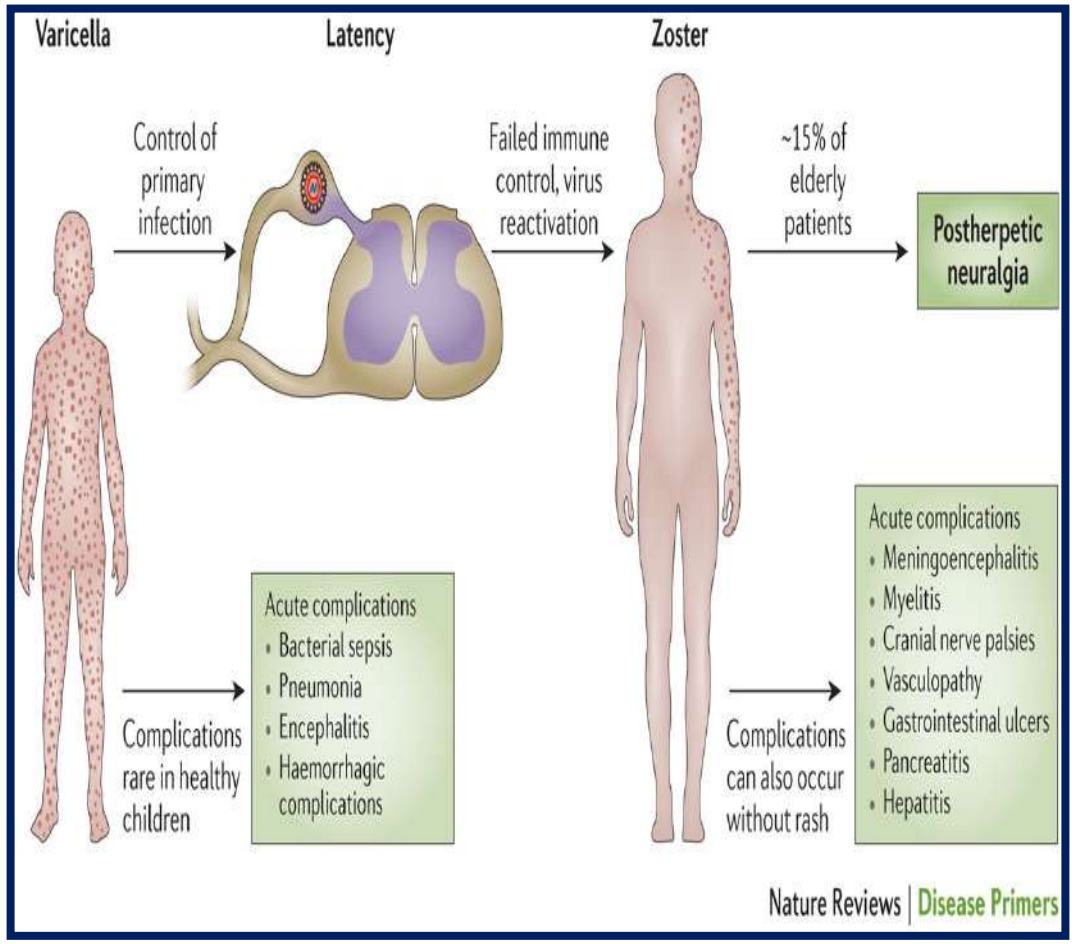


Older adults are at higher risk

8 out of 10 deaths reported in the U.S. have been in adults 65 years old and older.

See below for estimated percent of adults with confirmed COVID-19 reported in the U.S:

	Adults 65 – 84	Adults 85+
Hospitalizations	31-59%	31-70%
Admission to intensive care	11-31%	6-29%
Deaths	4-11%	10-27%



VZV latent enfeksiyonun kontrolü

ve

Reaktivasyonun önlenmesinde

↓

Hücresel immün yanıt kritik öneme sahiptir

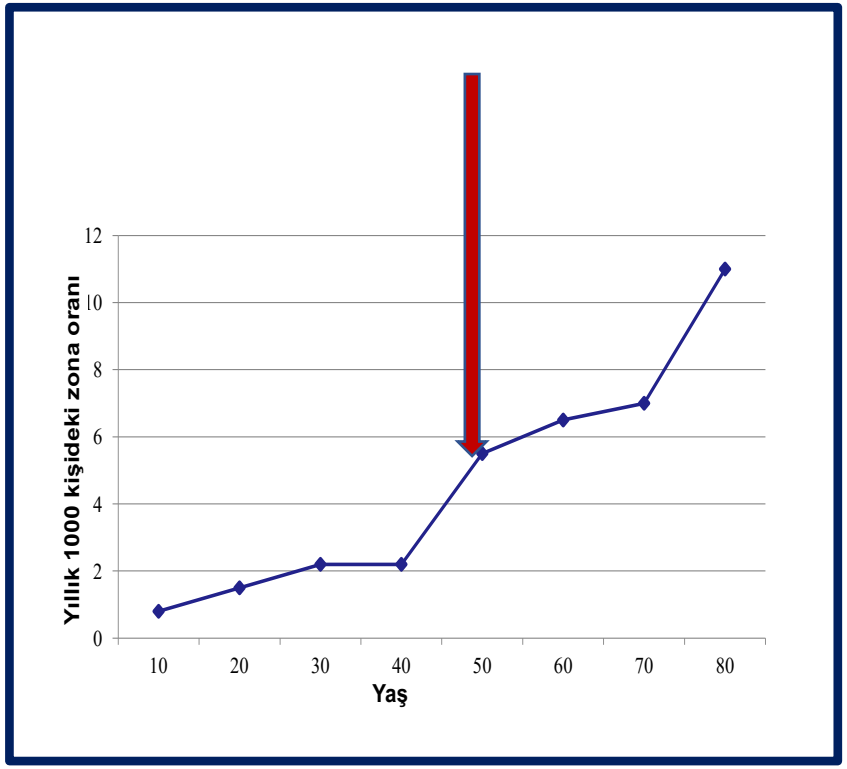
- ✓ 45 yaş üzeri- %3.3/yıl
- ✓ 65 yaş üzeri-%8.4/yıl

ABD'de ≥40 yaşındaki yetişkinlerin yaklaşık %99,5'i VZV enfeksiyonu için seropozitiftir ve her 3 kişiden 1'i yaşamları boyunca zona hastalığına yakalanmaktadır.[2]

Insinga RP, et al. *J Gen Intern Med* 2005; 20:748-53.
Yawn BP, et al. *Mayo Clin Proc* 2007; 82: 1341-9

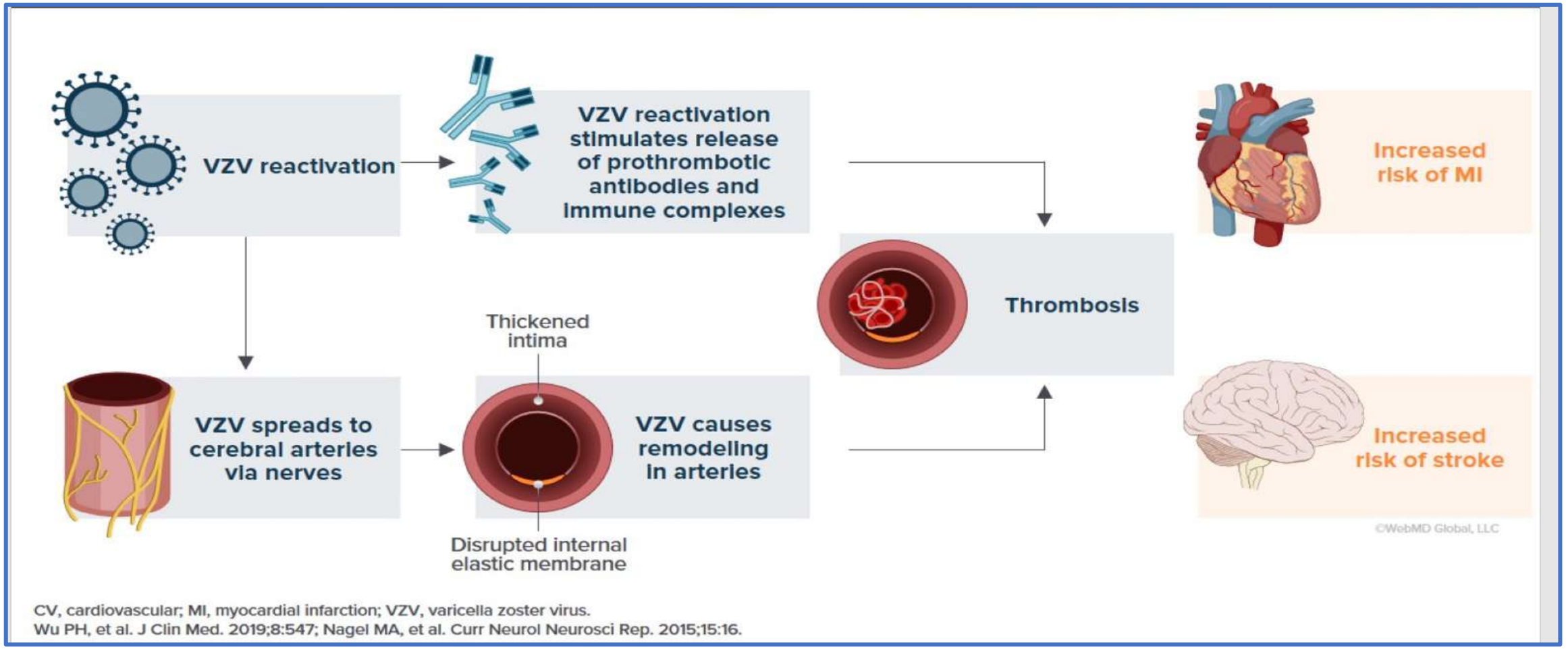
HERPES ZOSTER EPİDEMİYOLOJİ

- Yaşam boyu bir kişinin Herpes Zoster (HZ) geçirme riski yaklaşık %30
  - 50 yaş üstünde zona insidansı artmakta
  - 85 yaşına kadar zona geçirme riski %50



Insinga RP, et al. J Gen Intern Med 2005; 20:748-53.
Yawn BP, et al. Mayo Clin Proc 2007; 82: 1341-9

HERPES ZOSTER REAKTİVASYONU-VASKULOPATİ



CV, cardiovascular; MI, myocardial infarction; VZV, varicella zoster virus.
Wu PH, et al. J Clin Med. 2019;8:547; Nagel MA, et al. Curr Neurol Neurosci Rep. 2015;15:16.

Yaşlılar

YAŞLANMAK İNFEKSİYONLAR İÇİN RİSK FAKTÖRÜ
İNFEKSİYONLAR DA YAŞLANMAYI HIZLANDIRIYOR

……İnsanlar infeksiyon hastalıklarından erken ölmekten çok, ileri yaşta hastalıklı bir uzamış yaşam riskinden daha çok korkuyor olabilirler

Doherty TM, et al. Gerontology 2020;66:238–248.

İMMUN ESNEKLİK

Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2024

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
COVID-19	1 or more doses of updated (2023–2024 Formula) vaccine (See Notes)			
Influenza inactivated (IIV4) or Influenza recombinant (RIV4)	1 dose annually			
or	or			
Influenza live, attenuated (LAIV4)	1 dose annually			
Respiratory Syncytial Virus (RSV)	Seasonal administration during pregnancy. See Notes.			≥60 years
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			For healthcare personnel, see notes
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)	2 doses for immunocompromising conditions (see notes)		2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal (PCV15, PCV20, PPSV23)				See Notes
				See Notes
Hepatitis A (HepA)	2, 3, or 4 doses depending on vaccine			
Hepatitis B (HepB)	2, 3, or 4 doses depending on vaccine or condition			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	19 through 23 years	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations		
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			
Mpox				

Summary of recent changes (last updated March 1, 2024):

- All people ages 65 years and older should receive 1 additional dose of any updated (2023–2024 Formula) COVID-19 vaccine (i.e., Moderna, Novavax, Pfizer-BioNTech). For detailed guidance, see Table 1 and Table 2.

Table 2. Current recommendations for vaccines in the elderly (age ≥ 65 years).

Vaccine	Recommended frequency	Studies in elderly	Evidence of efficacy in the elderly
Pneumococcal (PPV)	Once at age ≥65 years	+	+/–
Influenza	1 dose annually	+	+/–
Tetanus, diphtheria	1 dose Td every 10 years	+	+
Herpes Zoster	Once at age ≥60 years	+	+
Hepatitis B	High-risk[a,b]	+	+
Measles, mumps, rubella	High-risk[a,b]	–	NA
Hepatitis A	High-risk[a,b]	+	NA
Meningococcal	High-risk[1,2]	+	NA
Japanese encephalitis	Travel[b]	+/–	NA
Typhoid (polysaccharide)	Travel[b]	–	NA
Typhoid (oral, live)	Travel[b]	–	NA
Polio	Travel[b]	–	NA
Yellow fever	Travel[b]	–	NA
Rabies	Travel[b]	+/–	NA
Cholera	Travel[b,c]	–	NA
Tick-borne encephalitis	Travel[b,c]	+	+

İMMUN YAŞLANMA/FARKLILAŞMA VE AŞI CEVAPLARI

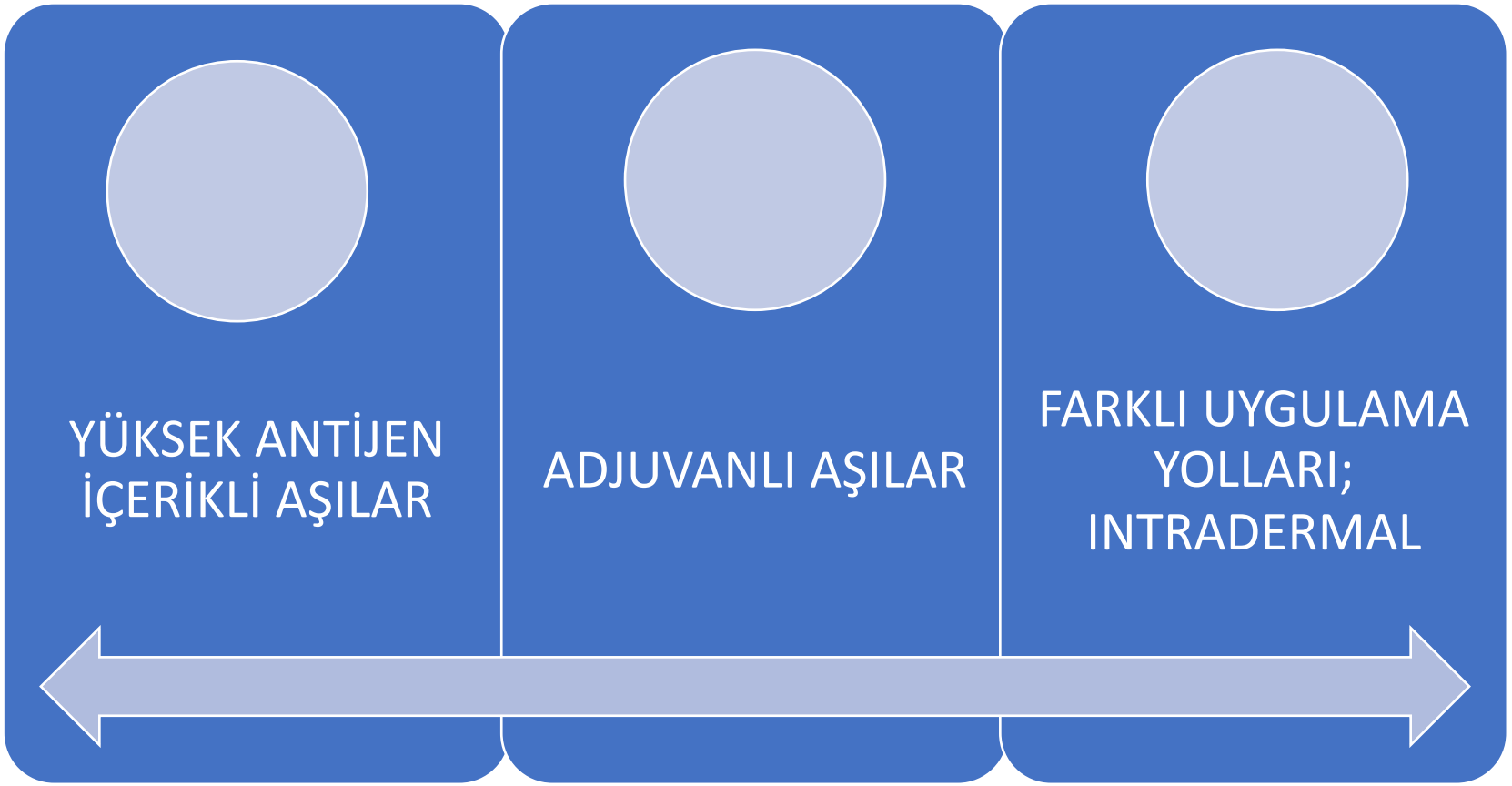
Box 1. Immunosenescence*.

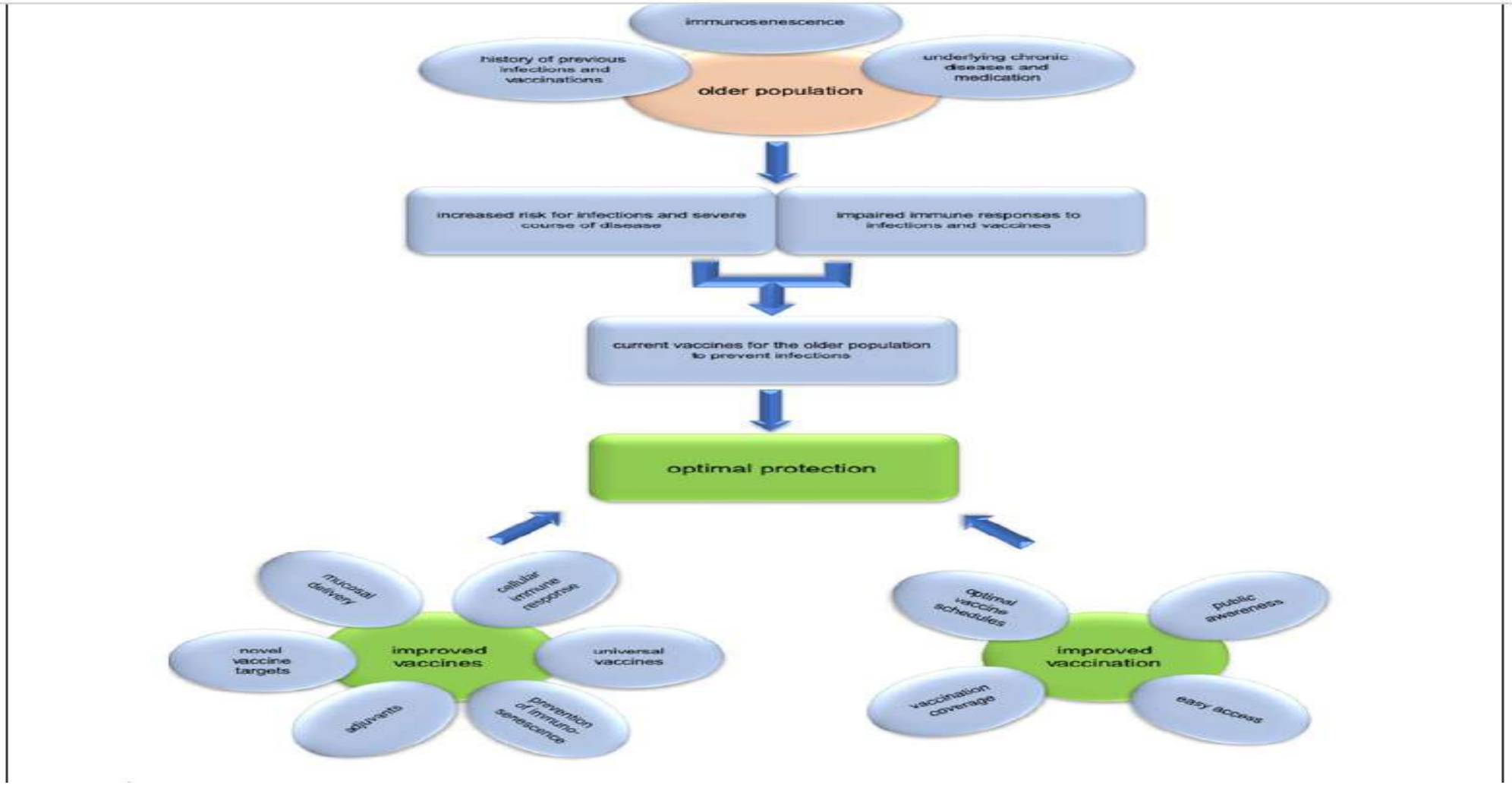
In contrast to younger individuals, hematopoietic stem cells (HSCs) in older subjects show a greater differentiation into myeloid progenitors at the expense of lymphoid progenitors than in younger individuals [5].
This results in fewer circulating antigen presenting cells (APCs) and a relative shift in the proportions of naïve and memory cells within both B and T-cell populations (fewer naïve cells and a corresponding increase in memory T and B cells) [5,6].
As a result, overall antibody production and specificity is diminished. It is this shift which leads to impaired immunity against infection in older people, and also to reduced vaccine efficacy and shorter duration of vaccine response [5].
A general increase in pro-inflammatory cytokine levels is also seen (in particular IL-6 and TNF-α), secreted by aging HSCs, and by other tissue cells as part of a more generalized cellular senescence [4,5].

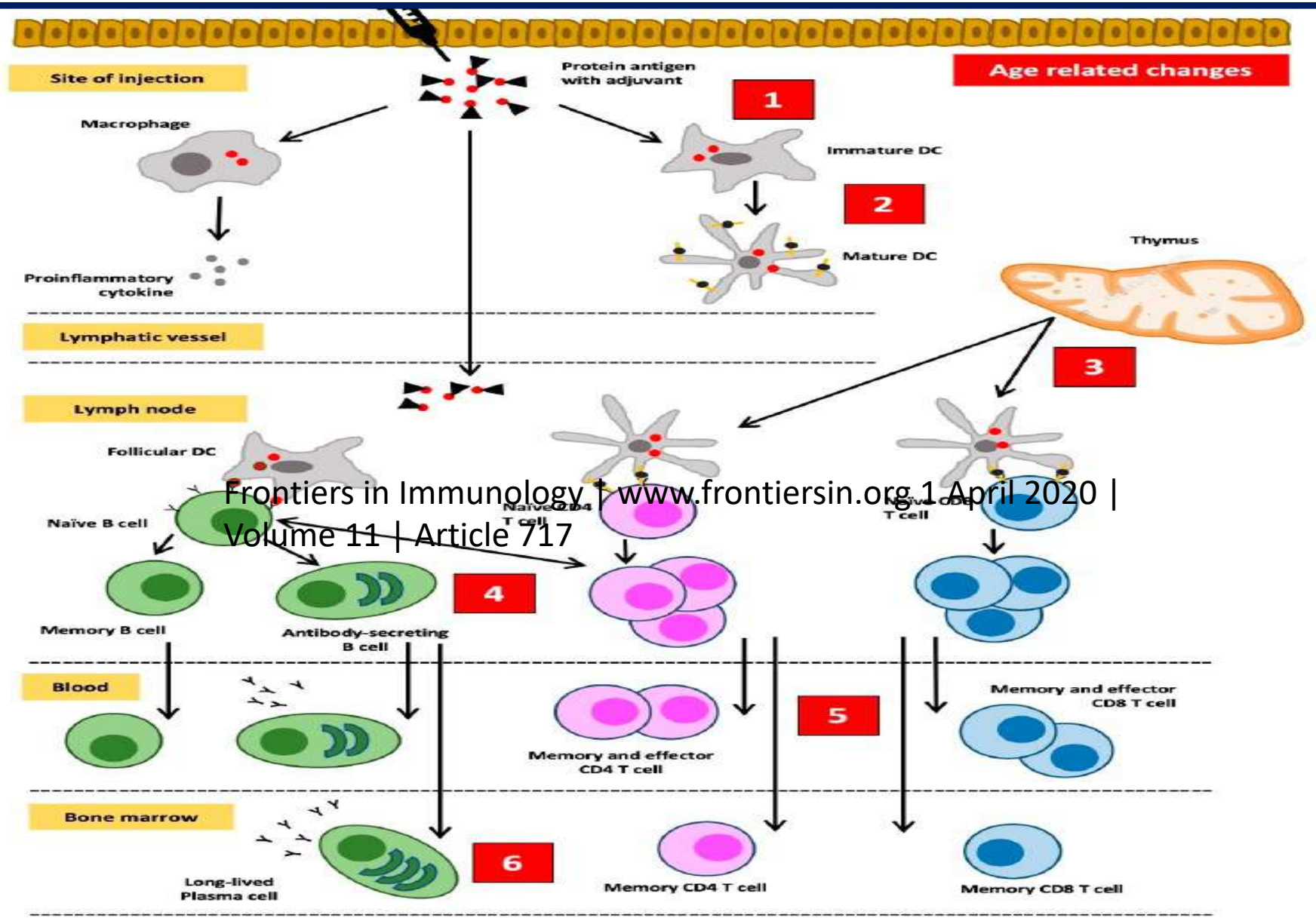
*It is important to realize that substantial variation exists in the relative contribution and extent of these mechanisms in individuals, and no direct correlation with specific chronological ages can be made.

- İmmün yaşlanma, humoral ve hücresel bağışıklığın azalmasına neden olur
  - Düzensiz sitokin üretimi
  - Birikmiş lenf nodu fibrozisi
  - Lenfosit disfonksiyonu

YAŞLILIKTA AŞI CEVAPLARINDAKİ AZALMA VE YENİ STRATEJİ GEREKSİNİMİ

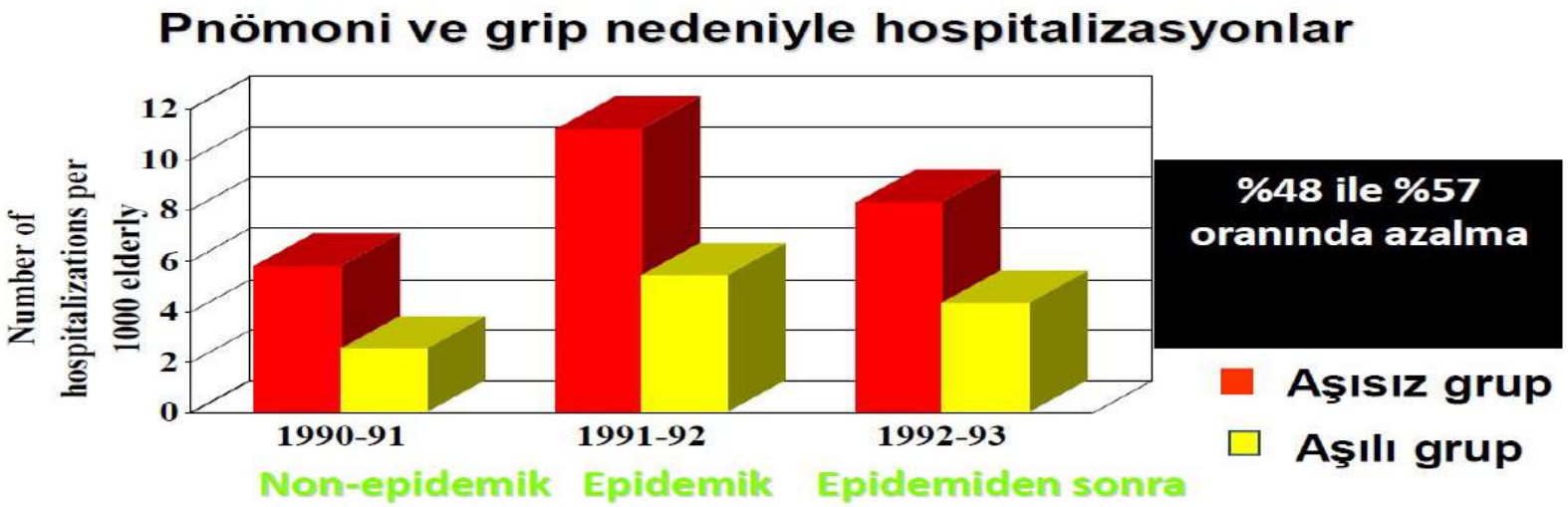



immunosenescence
history of previous infections and vaccinations
underlying chronic deseases and medication
older population
increased risk for infections and severe course of disease
impaired immune responses to infections and vaccines
current vaccines for the older population to prevent infections
optimal protection
improved vaccines
mucosal delivery
cellular immune response
novel vaccine targets
universal vaccines
adjuvants
prevention of immuno-senescence
improved vaccination
optimal vaccine schedules
public awareness
vaccination coverage
easy access



Frontiers in Immunology | www.frontiersin.org 1 April 2020 | Volume 11 | Article 717

YAŞLIDA GRİP AŞISININ YARARLARI

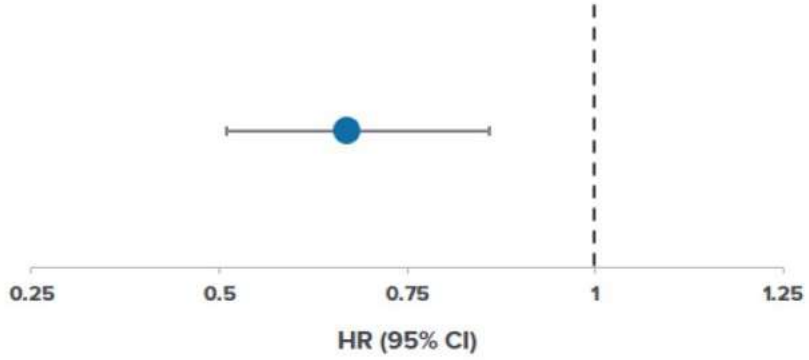


Her grupta 25.000'den fazla bireyin bulunduğu pnömoni ve influenza çalışmasında 1000 yaşlı kayıtlı hasta için ortalama hospitalizasyon sayısı (ABD)

Nichol KL, Margolis KL, Wuorenma J., Von Sternberg T. The efficacy and cost effectiveness of vaccination against influenza among elderly persons living in the community. NEJM 1994;778-84

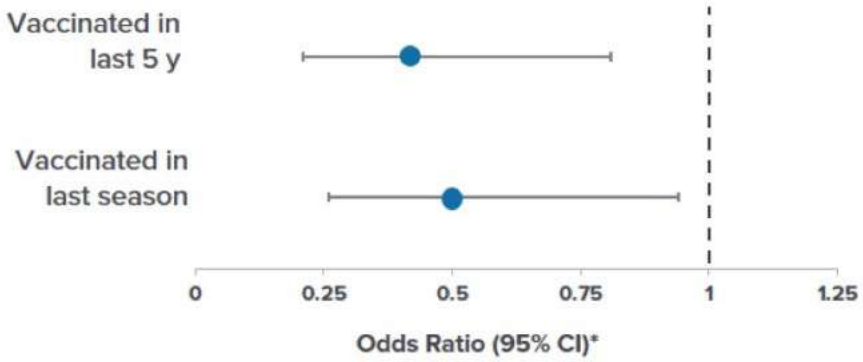
İNFLUENZA AŞILAMASI SONRASI İNME RİSKİNDEKİ VE KV OLAYLARDAKİ AZALMA

Risk of Major Adverse CV Event in Influenza-Vaccinated Participants With ACS Aged > 50 y vs Unvaccinated[a]



Influenza vaccination significantly reduced the risk of major adverse CV events **by 33%**

Risk of Brain Infarction in Influenza-Vaccinated Participants Aged ≥ 60 y vs Unvaccinated[b]



Influenza vaccination **significantly reduced** the risk of brain infarction regardless of time since vaccination

ACS, acute coronary syndrome.
a. Phrommintikul A, et al. Eur Heart J. 2011;32:1730-1735; b. Lavallée P, et al. Stroke. 2002;33:513-518.

2 herpes zoster virüs (VZV) aşısı mevcuttur

VZV glikoprotein E;
- Viral replikasyon
- Hücreden hücreye yayılma
- VZV'ye özgü immün yanıtların birincil hedefi

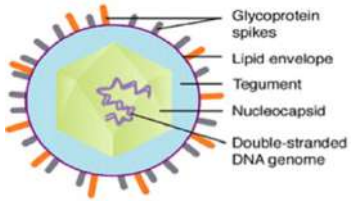
HERPES ZOSTER: COMBATING A LATENT VIRUS INFECTION (LIVE-ATTENUATED VERSUS RECOMBINANT ADJUVANTED VACCINE)

Canlı zayıflatılmış VZV aşısı (CZA) Zostavax

Rekombinant VZV aşısı (RZV) Shingrix

Oka suşu
Antijen miktarı suçiçeği aşısından 14 kat daha fazla
Tek doz, subkutan
2006 yılında 60 yaş ve üzeri için
2011'de 50 yaş ve üzeri için FDA onayı aldı

VZV'nin E glikoproteini ve
ASO1 adjuvanını içerir
2 doz, im
2017'de FDA onayı aldı



Zoster Aşılaması

Rutin Aşılama

50 yaş ve üzeri:

- 2 dozluk seri rekombinant zoster aşısı (RZV)
- 2-6 ay ara ile
- Minimum aralık 4 hafta

İmmünsupresif Hastalarda Aşılama Önerileri

FDA ve Avrupa İlaç Ajansı

İmmün yetmezlik veya immünsüpresyon nedeniyle herpes zoster riski yüksek olan ≥18 yaş bireyler

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 28, 2015 VOL. 372 NO. 22

Efficacy of an Adjuvanted Herpes Zoster Subunit Vaccine in Older Adults

Himal Lal, M.D., Anthony L. Cunningham, M.B., B.S., M.D., Olivier Godeaux, M.D., Roman Chlibek, M.D., Ph.D., Javier Diez-Domingo, M.D., Ph.D., Shinn-Jang Hwang, M.D., Myron J. Levin, M.D., Janet E. McElhaney, M.D., Airi Poder, M.D., Joan Puig-Barberà, M.D., M.P.H., Ph.D., Timo Vesikari, M.D., Ph.D., Daisuke Watanabe, M.D., Ph.D., Lily Weckx, M.D., Ph.D., Toufik Zahaf, Ph.D., and Thomas C. Heineman, M.D., Ph.D., for the ZOE-50 Study Group*

Table 2. Vaccine Efficacy against the First or Only Episode of Herpes Zoster Infection.*

Cohort and Age Group	HZ/su Group				Placebo Group				Vaccine Efficacy†
	No. of Participants	No. of Confirmed Cases	Cumulative Follow-up Period‡	Rate of Herpes Zoster	No. of Participants	No. of Confirmed Cases	Cumulative Follow-up Period‡	Rate of Herpes Zoster	
			person-yr	*no./1000 person-yr*			*person-yr*	*no./1000 person-yr*	*% (95% CI)*
Modified vaccinated cohort									
All participants in cohort	7344	6	23,297.0	0.3	7415	210	23,170.5	9.1	97.2 (93.7–99.0)
50–59 yr	3492	3	11,161.3	0.3	3525	87	11,134.7	7.8	96.6 (89.6–99.3)
60–69 yr	2141	2	7,007.9	0.3	2166	75	6,952.7	10.8	97.4 (90.1–99.7)
70 yr or older	1711	1	5,127.9	0.2	1724	48	5,083.0	9.4	97.9 (87.9–100.0)
Total vaccinated cohort									
All participants in cohort	7698	9	25,584.5	0.4	7713	235	25,359.9	9.3	96.2 (92.7–98.3)
50–59 yr	3645	3	12,244.9	0.2	3644	95	12,162.5	7.8	96.9 (90.6–99.4)
60–69 yr	2244	5	7,674.1	0.7	2246	83	7,581.8	10.9	94.1 (85.6–98.1)
70 yr or older	1809	1	5,665.5	0.2	1823	57	5,615.6	10.2	98.3 (89.9–100.0)

ZOE-50
Clinical Trials

- 18 ülke
- ≥50 yaşında 15.411 kişi
  - 7698 RZV grubu
  - 7713 plasebo grubu
- Ortalama 3,2 yıllık takipte
- Herpes zoster'a karşı genel aşı etkinliği %97,2
- Yaş grupları arasında aşı etkinliği için anlamlı bir fark yok
  - **Aşı etkinliği tüm yaş grupları için %96,6 ila %97,9 arasında**

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 SEPTEMBER 15, 2016 VOL. 375 NO. 11

Efficacy of the Herpes Zoster Subunit Vaccine in Adults 70 Years of Age or Older

A.L. Cunningham, H. Lal, M. Kovac, R. Chlibek, S.-J. Hwang, J. Díez-Domingo, O. Godeaux, M.J. Levin, J.E. McElhaney, J. Puig-Barberà, C. Vanden Abeele, T. Vesikari, D. Watanabe, T. Zahaf, A. Ahonen, E. Athan, J.F. Barba-Gomez, L. Campora, F. de Looze, H.J. Downey, W. Ghesquiere, I. Gorfinkel, T. Korhonen, E. Leung, S.A. McNeil, L. Oostvogels, L. Rombo, J. Smetana, L. Weckx, W. Yeo, and T.C. Heineman, for the ZOE-70 Study Group*

RZV Aşısı Etkinlik Verileri

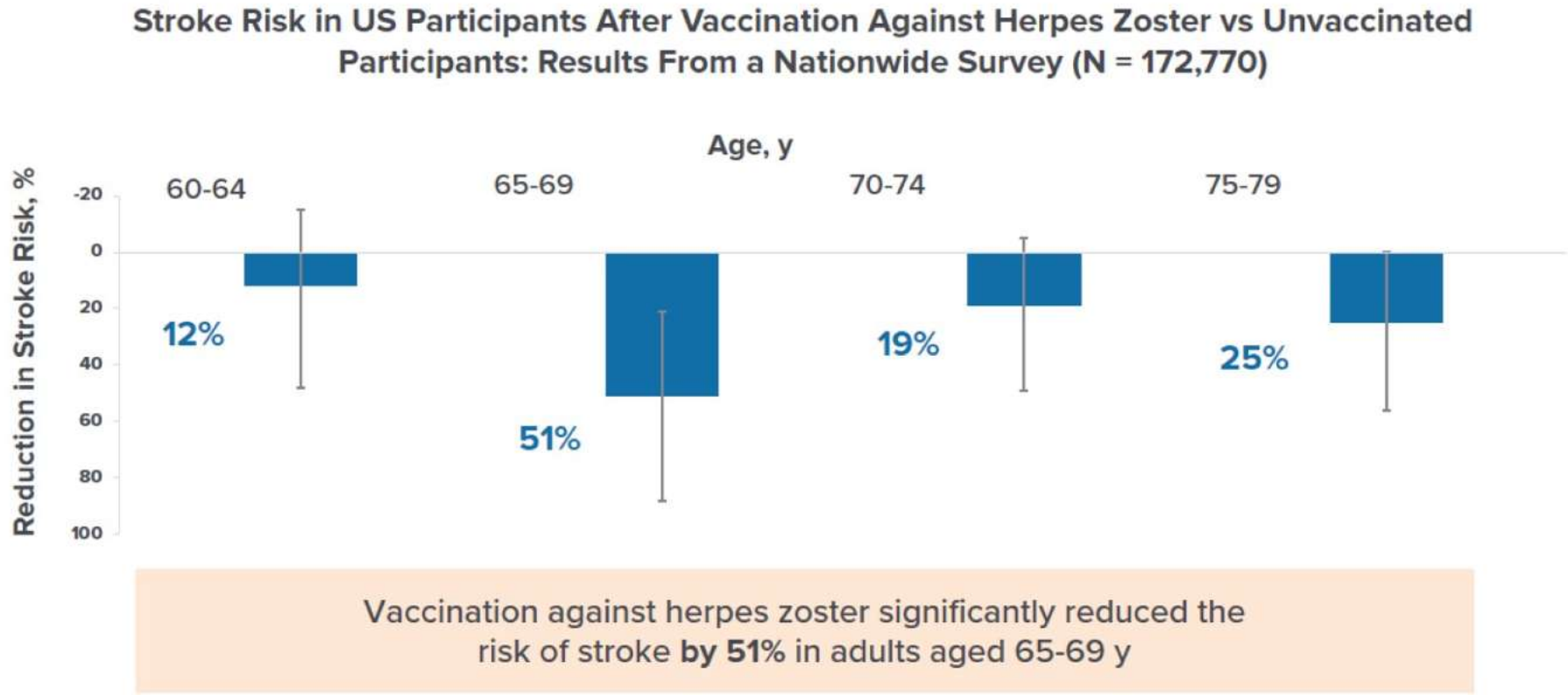
ZOE-70
Clinical Trials

Table 1. Vaccine Efficacy against the First or Only Episode of Herpes Zoster and Postherpetic Neuralgia in the Modified Vaccinated Cohort.*

Condition and Cohort	HZ/su Group				Placebo Group				Vaccine Efficacy†
	Participants	Cases	Cumulative Follow-up Period‡	Incidence Rate	Participants	Cases	Cumulative Follow-up Period‡	Incidence Rate	
	number		*person-yr*	*cases/1000 person-yr*	*number*		*person-yr*	*cases/1000 person-yr*	*% (95% CI)*
Herpes zoster									
ZOE-70									
Age group									
Overall	6,541	23	24,405.1	0.9	6,622	223	24,167.8	9.2	89.8 (84.2 to 93.7)
70–79 yr	5,114	17	19,346.5	0.9	5,189	169	19,247.5	8.8	90.0 (83.5 to 94.4)
≥80 yr	1,427	6	5,058.5	1.2	1,433	54	4,920.3	11.0	89.1 (74.6 to 96.2)
Year§									
1	6,541	2	6,464.7	0.3	6,622	68	6,511.2	10.4	97.0 ([illegible] to 99.7)
2	6,379	6	6,281.0	1.0	6,372	68	6,240.4	10.9	91.3 ([illegible] to 96.9)
3	6,137	9	6,043.5	1.5	6,076	48	5,943.0	8.1	81.6 ([illegible] to 92.1)
4	5,898	6	5,615.9	1.1	5,776	39	5,473.2	7.1	85.1 ([illegible] to 94.9)
Pooled ZOE-70 and ZOE-50									
Age group									
Overall	8,250	25	30,725.5	0.8	8,346	284	30,414.7	9.3	91.3 (86.8 to 94.5)
70–79 yr	6,468	19	24,410.9	0.8	6,554	216	24,262.8	8.9	91.3 (86.0 to 94.9)
≥80 yr	1,782	6	6,314.6	1.0	1,792	68	6,151.9	11.1	91.4 (80.2 to 97.0)
Year§									
1	8,250	2	8,156.2	0.2	8,346	83	8,206.2	10.1	97.6 ([illegible] to 99.8)
2	8,039	7	7,916.9	0.9	8,024	87	7,860.5	11.1	92.0 ([illegible] to 96.9)
3	7,736	9	7,612.2	1.2	7,661	58	7,488.4	7.7	84.7 ([illegible] to 93.4)
4	7,426	7	7,040.3	1.0	7,267	56	6,859.6	8.2	87.9 ([illegible] to 95.4)
Postherpetic neuralgia									
Pooled ZOE-70 and ZOE-50									
≥70 yr¶	8,250	4	30,760.3	0.1	8,346	36	30,942.0	1.2	88.8 (68.7 to 97.1)
≥50 yr	13,881	4	53,171.5	0.1	14,035	46	53,545.0	0.9	91.2 (75.9 to 97.7)

- ≥ 70 yaş 13.900 yetişkin
- Ortalama 3,7 yıllık takip
- Aşı etkinliği %89,8
- 70-80 ve 80 yaş üzeri aşı etkinliği benzer
- Herpes zoster;
  - RZV grubunda 23 hastada
  - Plasebo grubunda 223 hastada gelişmiş
  - 1000 kişi-yıl başına 0,9'a karşı 9,2
- 1000 kişi yılı başına postherpetik nevralji insidansı;
  - RZV grubunda 0,1
  - Plasebo grubunda 0,9
- **Postherpetik nevraljiye karşı aşının etkinliği %88,8**

ZOSTER AŞILAMASI SONRASI İNME RİSKİNDEKİ AZALMA



Klaric JS, et al. Mil Med. 2019;184:126-132.

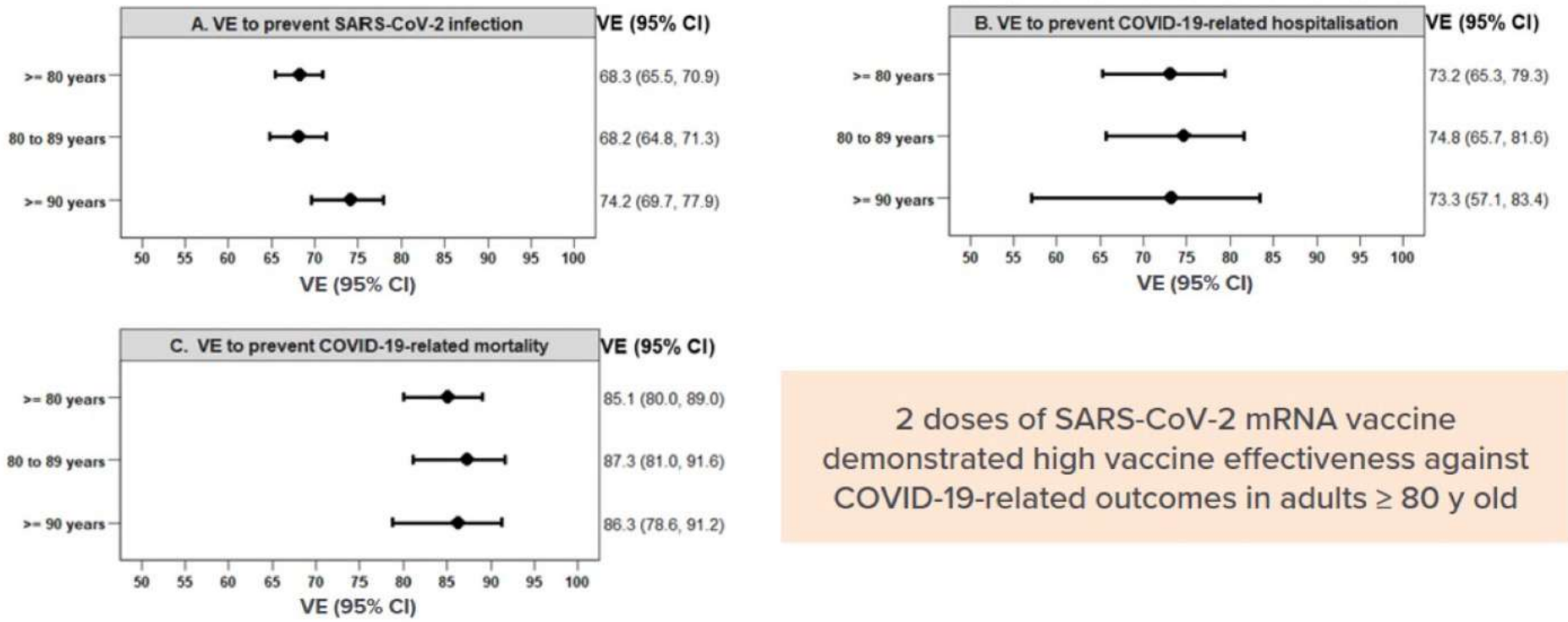
Covid-19: UK launches world's first mass vaccination programme

77 shares

Issued on: 08/12/2020 - 07:47

YAŞLIDA COVID BAĞIŞIKLAMASI

Prospective Observational Study of 708,187 Persons Aged ≥ 80 y Living in Bavaria, Germany



2 doses of SARS-CoV-2 mRNA vaccine demonstrated high vaccine effectiveness against COVID-19-related outcomes in adults ≥ 80 y old

mRNA, messenger RNA; VE, vaccine effectiveness.
Gomes D, et al. PLoS One. 2021;16:e0259370.

Pneumococcal Vaccine Timing for Adults

Make sure your patients are up to date with pneumococcal vaccination.

Adults ≥65 years old
Complete pneumococcal vaccine schedules

Prior vaccines	Option A	Option B
None*	**PCV20**	**PCV15** → ≥1 year† → **PPSV23**
PPSV23 only at any age	≥1 year → **PCV20**	≥1 year → **PCV15**
PCV13 only at any age	≥1 year → **PCV20**	≥1 year† → **PPSV23**
PCV13 at any age & **PPSV23** at <65 yrs	≥5 years → **PCV20**	≥5 years§ → **PPSV23**

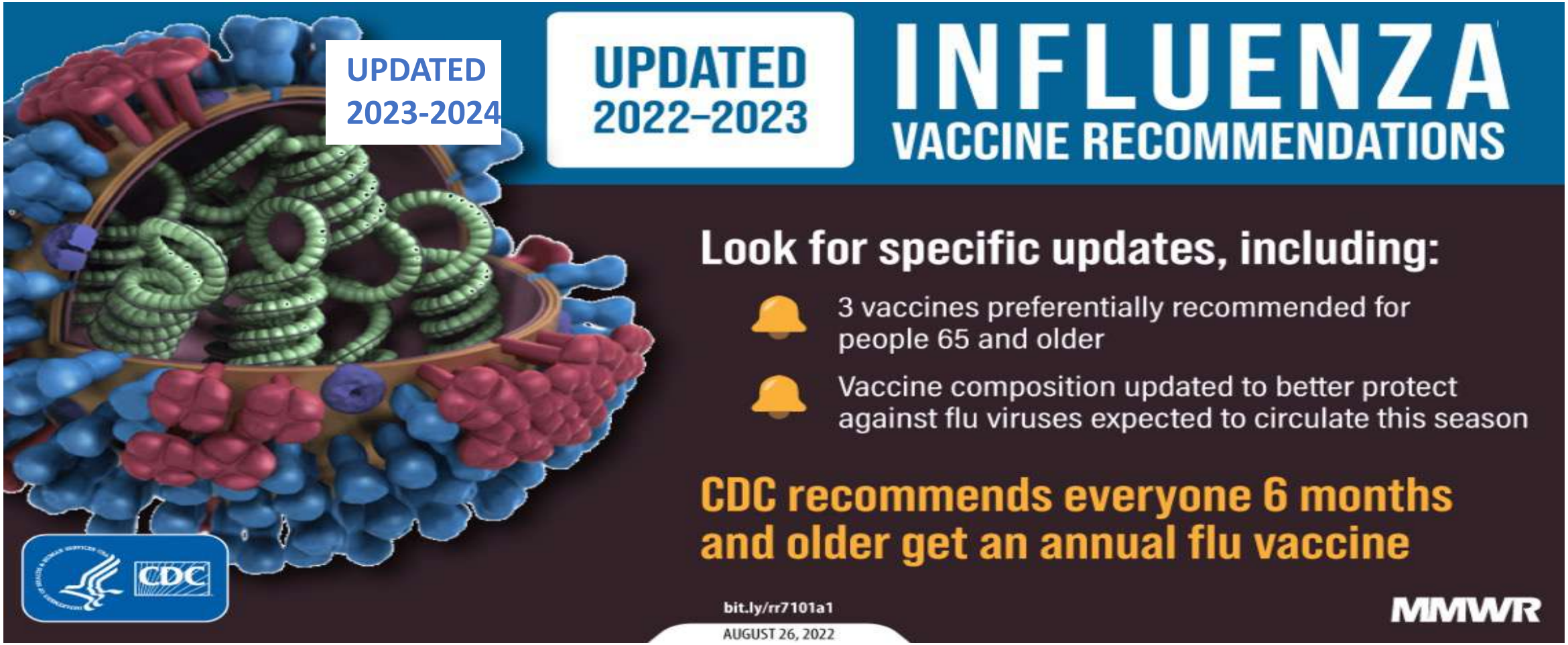
* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines
† Consider minimum interval (8 weeks) for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak (CSF) leak
§ For adults with an immunocompromising condition, cochlear implant, or CSF leak, the minimum interval for PPSV23 is ≥8 weeks since last PCV13 dose and ≥5 years since last PPSV23 dose; for others, the minimum interval for PPSV23 is ≥1 year since last PCV13 dose and ≥5 years since last PPSV23 dose

Shared clinical decision-making for those who already completed the series with PCV13 and PPSV23

Prior vaccines	Shared clinical decision-making option
Complete series: PCV13 at any age & **PPSV23** at ≥65 yrs	≥5 years → **PCV20** Together, with the patient, vaccine providers **may choose** to administer PCV20 to adults ≥65 years old who have already received PCV13 (but not PCV15 or PCV20) at any age and PPSV23 at or after the age of 65 years old.

www.cdc.gov/pneumococcal/vaccination.html

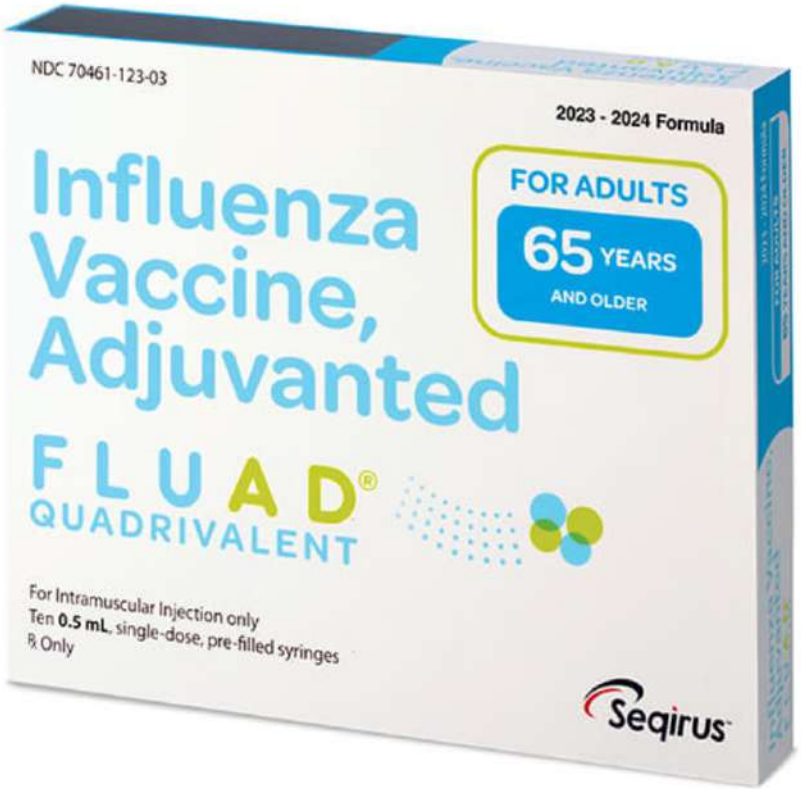
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



Grohskopf LA, MMWR Recomm Rep 2023;72(No. RR-2):1–25. DOI: http://dx.doi.org/10.15585/mmwr.rr7202a1
https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm?s_cid=rr7202a1_w

Adjuvanlanmış Dört Değerlikli İnaktif İnfluenza Aşıları (aIIV4) – MF59 adjuvanıyla standart doz– Yumurta Bazlı
(0,7 ml'de virüs bileşeni başına 60µg HA)

İnaktif İnfluenza Aşıları – Yüksek Doz (HD-IIV4) – Yumurta Bazlı
(0,7 ml'de virüs bileşeni başına 60µg HA)



- HD-IIV4
- aIIV4
- RIV4

Flublok®
QUADRIVALENT
Influenza Vaccine

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Efficacy of High-Dose versus Standard-Dose Influenza Vaccine in Older Adults

Carlos A. DiazGranados, M.D., Andrew J. Dunning, Ph.D., Murray Kimmel, D.O., Daniel Kirby, B.Sc., John Treanor, M.D., Avi Collins, B.Sc.N., Richard Pollak, D.P.M., Janet Christoff, R.N., John Earl, M.D., Victoria Landolfi, M.Sc., M.B.A., Earl Martin, D.O., Sanjay Gurunathan, M.D., Richard Nathan, D.O., David P. Greenberg, M.D., Nadia G. Tornieporth, M.D., Michael D. Decker, M.D., M.P.H., and H. Keipp Talbot, M.D., M.P.H.

IIV3 influenza
Yüksek doz (60 µg) & standart doz (15 µg)

Antikor yanıtı ⇧
İnfluenza benzeri hastalık sıklığı ⇩

Human Vaccines & Immunotherapeutics

ISSN: 2164-5515 (Print) 2164-554X (Online) Journal homepage: https://www.tandfonline.com/loi/khvi20

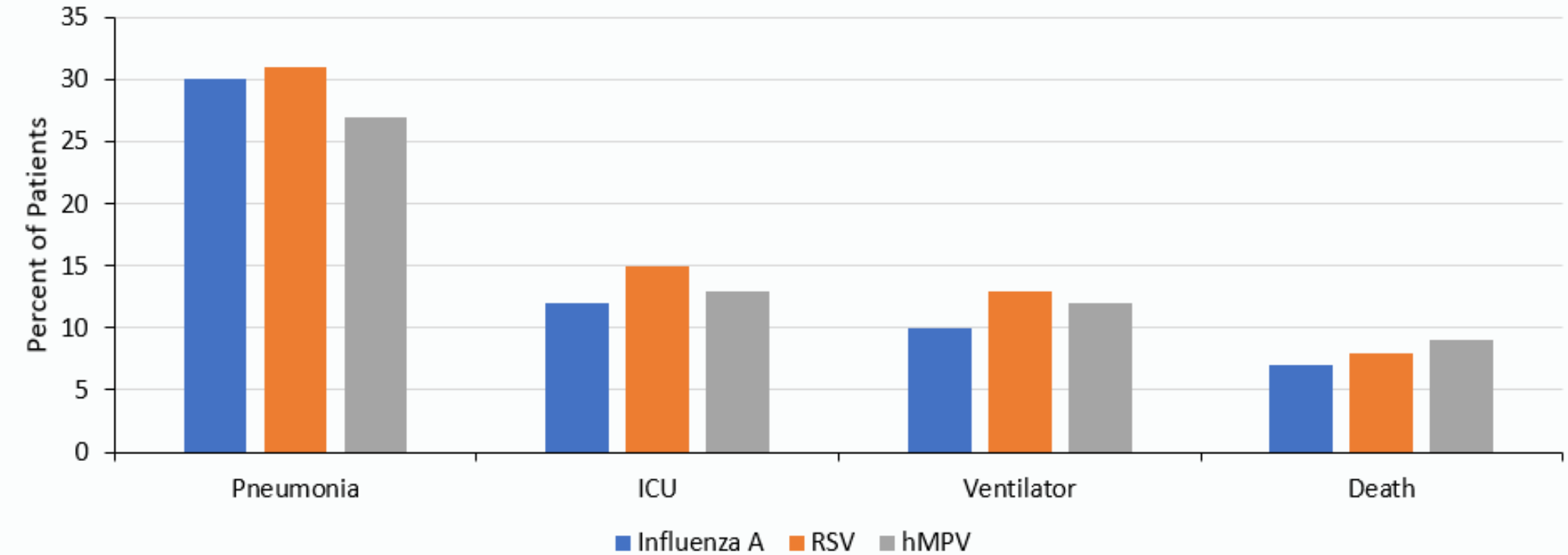
Immunogenicity and safety of high-dose quadrivalent influenza vaccine in Japanese adults ≥65 years of age: a randomized controlled clinical trial

Leilani Sanchez, Osamu Matsuoka, Satoshi Inoue, Takahiro Inoue, Ya Meng, Takahiro Nakama, Kumiko Kato, Aseem Pandey & Lee-Jah Changfor the QHD00008 Study Team

IIV4 influenza
Yüksek doz (60 µg) & standart doz (15 µg)

Antikor yanıtı ⇧
Yan etki gelişimi açısından benzer
IM daha etkin ve güvenilir

Clinical Outcomes in Hospitalized Patients



hMPV, human metapneumovirus

Falsey AR, et al. *N Engl J Med.* 2005;352(17):1749-1759.
Walsh EE, et al. *J Infect Dis.* 2013;208(10):1634-1642.

RSV için Ruhsatlı 2 Aşı

- AREXVY (GSK)
    - Mayıs 2023 ≥60 yaş
- ABRYSVO (Pfizer)
    - Mayıs 2023 ≥60 yaş
    - Ağustos 2023 Maternal (32-36 gebelik haftası)

AREXVY

Table 2. Efficacy analysis: First RSV-associated LRTD overall, by age and co-morbidity subgroups (modified exposed set)

Subgroup	Arexvy			Placebo			% Efficacy (CI)[a]
	N	n	Incidence rate per 1 000 person-years	N	n	Incidence rate per 1 000 person-years	
Overall (≥ 60 years)[b]	12 466	7	1.0	12 494	40	5.8	82.6 (57.9, 94.1)
60-69 years	6 963	4	1.0	6 979	21	5.5	81.0 (43.6, 95.3)
70-79 years	4 487	1	0.4	4 487	16	6.5	93.8 (60.2, 99.9)
Participants with at least 1 comorbidity of interest	4 937	1	0.4	4 861	18	6.6	94.6 (65.9, 99.9)

[a]CI = Confidence Interval (96.95% for the overall (≥ 60 years) and 95% for all subgroup analyses). Two-sided exact CI for vaccine efficacy is derived based on Poisson model adjusted by age categories and regions.

[b]Primary confirmatory objective with pre-specified success criterion of lower limit of the 2-sided CI for vaccine efficacy above 20%

N = Number of participants included in each group

n = Number of participants having first occurrence of RSV-confirmed LRTD occurring from Day 15 post vaccination

ABRYSVO

TABLE 3. Efficacy of 1 dose of Pfizer respiratory syncytial virus RSVpreF vaccine against respiratory syncytial virus–associated disease among adults aged ≥60 years — multiple countries, 2021–2023

Efficacy evaluation period	Vaccine efficacy against outcome, % (95% CI)*	
	RSV-associated LRTD†	RSV-associated medically attended LRTD§
Season 1¶	88.9 (53.6–98.7)	84.6 (32.0–98.3)
Season 2 (interim)**	78.6 (23.2–96.1)	—††
Combined seasons 1 and 2 (interim)§§	84.4 (59.6–95.2)	81.0 (43.5–95.2)

Abbreviations: LRTD = lower respiratory tract disease; LRTI = lower respiratory tract illness; RSV = respiratory syncytial virus.

Bunca düşünce, bunca anımsayış
başını döndürüyor yaşlı adamın.
Ve gidiyor gözleri
kahvenin masasında iki büklüm.
Konstantinos Kavafis

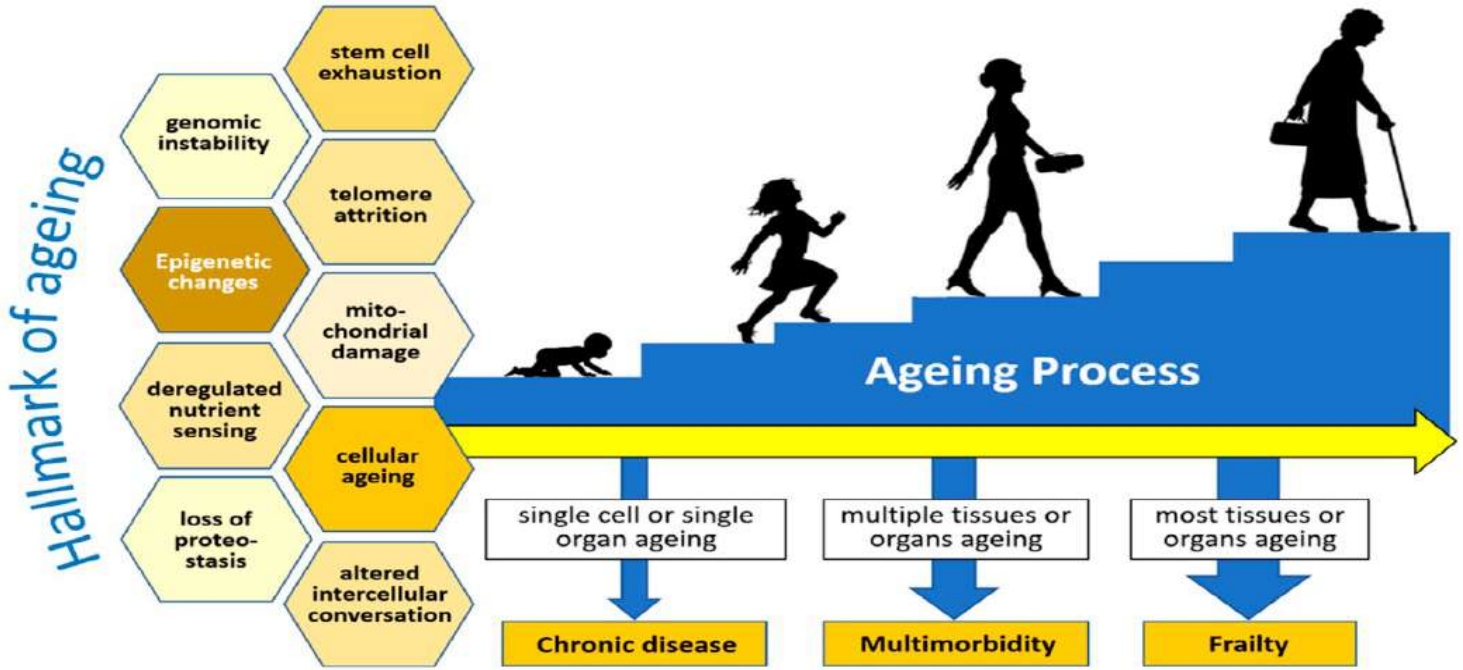


Figure 1. The multisystem aging process and frailty. Redrawn and adapted from Thillainadesan, J., et al. [19].