

[Session 2. 향후 알레르기질환의 예방과 관리]

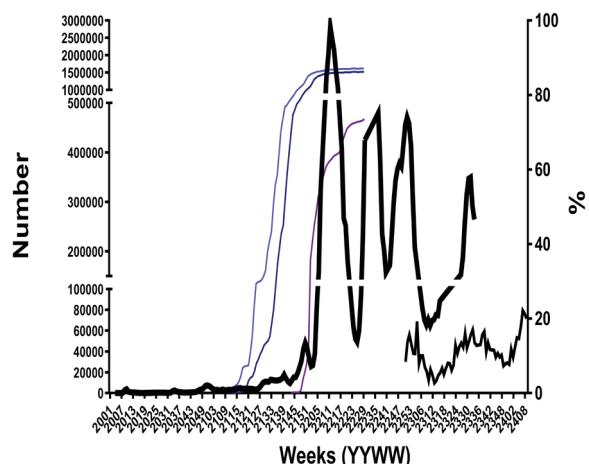
필수교육: 코로나 백신 계속 맞아야 하나요?

최성호

중앙의대 내과

코로나 백신 계속 맞아야 하나요?

2024년 대한천식알레르기학회
제63차 알레르기 교육강좌
2024년 3월 17일(일)
13:50 ~ 14:50
중앙의대 김염내과 최성호



TIMELINE OF THE VARIANTS OF CORONAVIRUS

Sources: WHO, National Collaborating Centre for Infectious Diseases, Centers for Disease Control and Prevention

* There are indications that Omicron was already spreading in December 2020 before being identified in southern Africa. The BHF branch continues to find Omicron in samples during their December 2022 survey.

1 ALPHA B.1.1.7
TYPE OF VARIANT: Variant of concern
EARLIEST DOCUMENTED: September 2020
EARLIEST DOCUMENTED IN: United Kingdom
Spike mutations: 11 10% more transmissible than earlier strains
IN CANADA: December 28, 2020

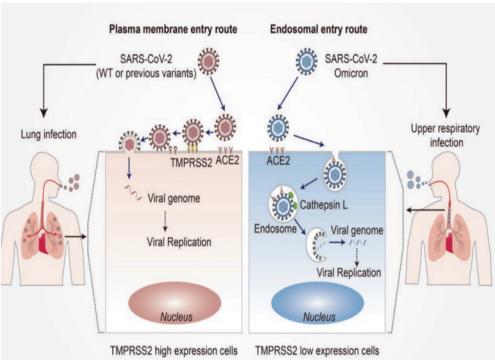
2 BETA B.1.351
TYPE OF VARIANT: Variant of concern
EARLIEST DOCUMENTED: May 2020
EARLIEST DOCUMENTED IN: South Africa
Spike mutations: 10 10% more transmissible than the Alpha variant
IN CANADA: January 8, 2021

3 GAMMA B.1.1.248
TYPE OF VARIANT: Variant of concern
EARLIEST DOCUMENTED: November 2020
EARLIEST DOCUMENTED IN: Brazil
Spike mutations: 12
IN CANADA: February 8, 2021

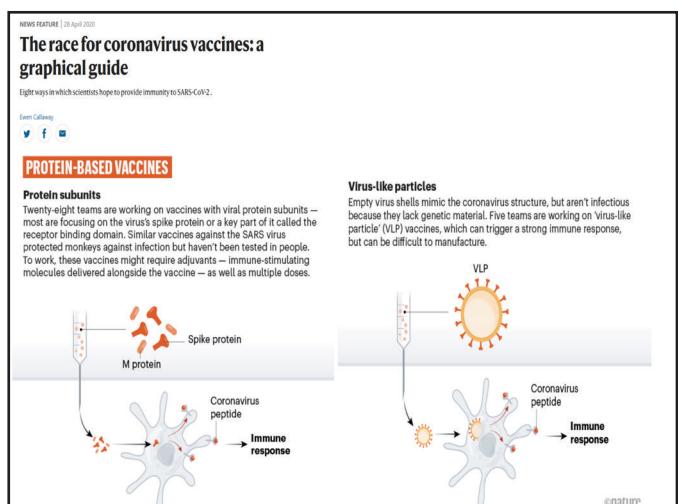
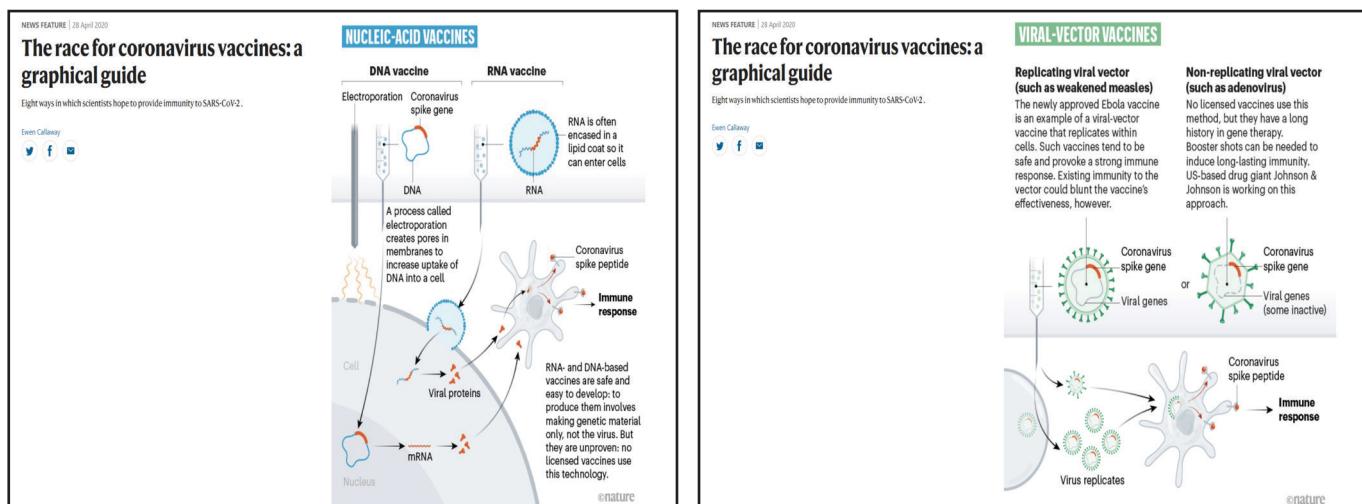
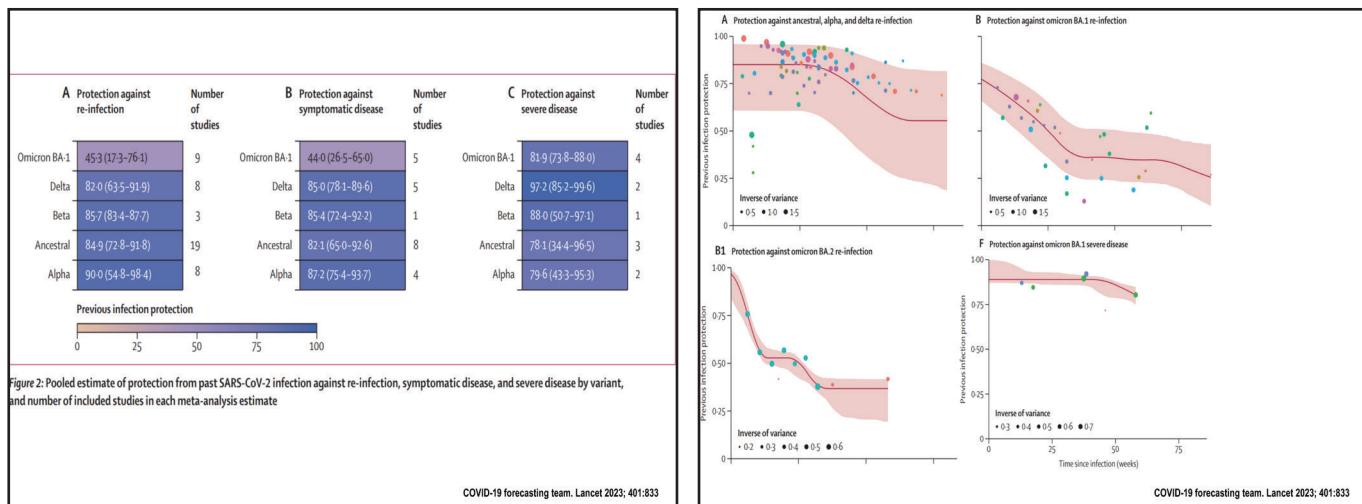
4 DELTA B.1.617.2
TYPE OF VARIANT: Variant of concern
EARLIEST DOCUMENTED: October 2020
EARLIEST DOCUMENTED IN: India
Spike mutations: 10 10% more transmissible than the Alpha variant
IN CANADA: April 21, 2021

5 OMICRON* B.1.1.529
TYPE OF VARIANT: Variant of concern
EARLIEST DOCUMENTED: November 24, 2021
EARLIEST DOCUMENTED IN: Multiple countries
Spike mutations: 32
SOUTH AFRICA first reported the case*
IN CANADA: November 28, 2021

COVID-19 variant of concern timeline (Jasna Baric / CTV News)



Signal Transduction and Targeted Therapy 2022



| 구분 | 실험기증명 | 제조방 | 제조사 | 백신 플랫폼 | 접종량 및 백신 | 국내허가연령 |
|---------------|--|------------------|------------------|--|--|--------|
| 단가 백신 | 화이자백신 (코마나리주 0.1mg/劑) | 화이자 및 바이오엔تك | | mRNA | 2dose500µg, 0.3ml, 근육 | 12세 이상 |
| | 5-11세용 화이자백신 (코마나리주 1mg/劑 (5-11세용)) | 화이자 및 바이오엔تك | | mRNA | 2dose100µg, 0.2ml, 근육 | 5-11세 |
| | 6개월-4세용 화이자백신 (코마나리주 1mg/劑 (6개월-4세용)) | 화이자 및 바이오엔تك | | mRNA | 3dose50µg, 0.2ml, 근육 | 6개월-4세 |
| 모더나백신 | | 모더나피어코믹스주 | 모더나코리아(주) | mRNA | 6-11세: 2dose500µg, 0.25ml, 근육 12세 이상: 2dose100µg, 0.5ml, 근육 | 6세 이상 |
| 노바백스백신 | 뉴욕소비드 프리미드코리아 | 노바백스 | 합성항원 (제조합) 백신 | 2dose(0.5ml), 근육 | 12세 이상 | |
| 스카이로비던 백신 | 스카이로비던 멀티주 | SK바이오 사이언스(주) | 합성항원 (제조합) 백신 | 2dose(0.5ml), 근육 | 18세 이상 | |
| 아스트라제네카 백신 | 한국아스트라제네카 코비드-19백신 한국 아스트라제네카(주) | 한국 아스트라제네카(주) | 바이러스 백신 | 2dose5 x 10 ¹⁰ viral particles, 0.5ml, 근육 | 18세 이상 | |
| 인생백신 | 코비드-19백신 인생 | 인생 | 바이러스 백신 | 1dose(0.5ml), 근육 | 18세 이상 | |

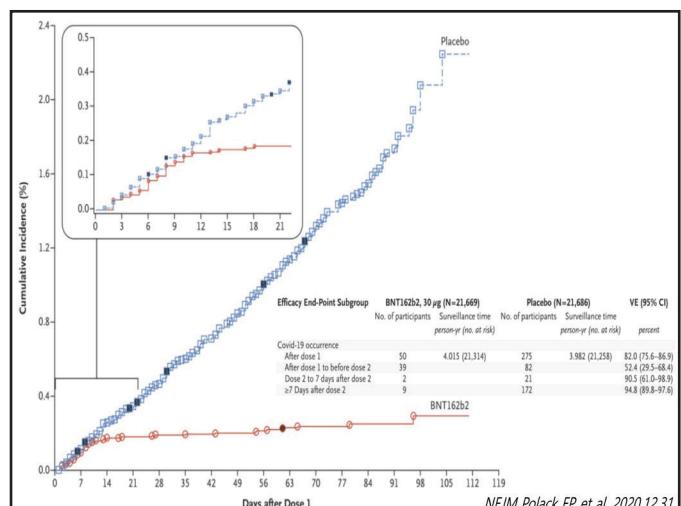
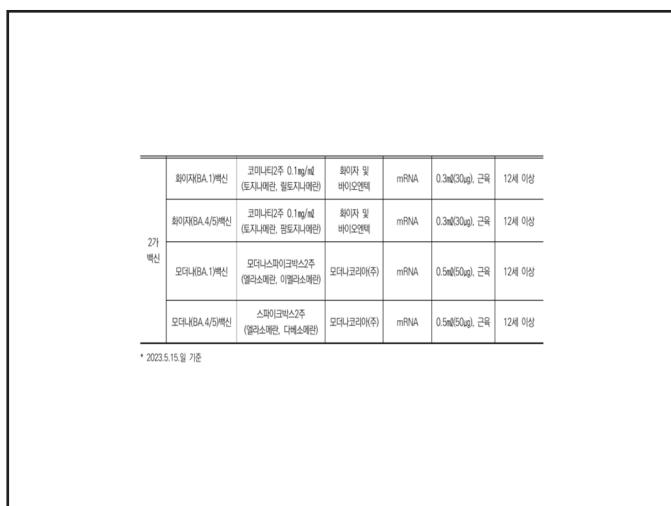
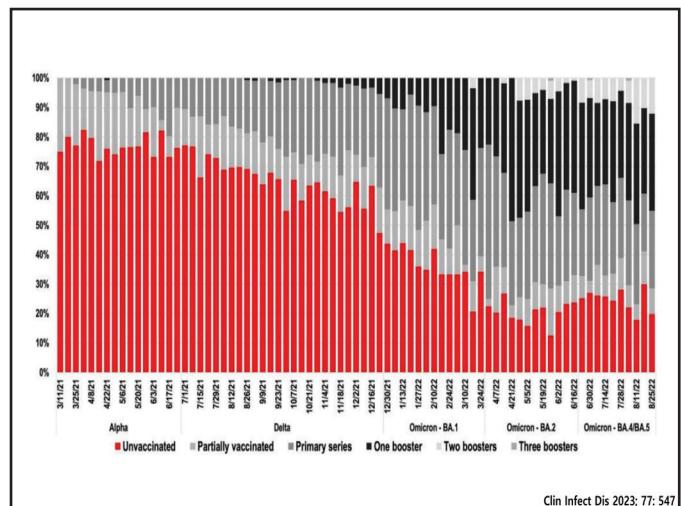


Table 1. Demographics and Clinical Characteristics of Patients by Predominant SARS-CoV-2 Variant Period—IVY Network, United States, 11 March 2021 to 31 August 2022

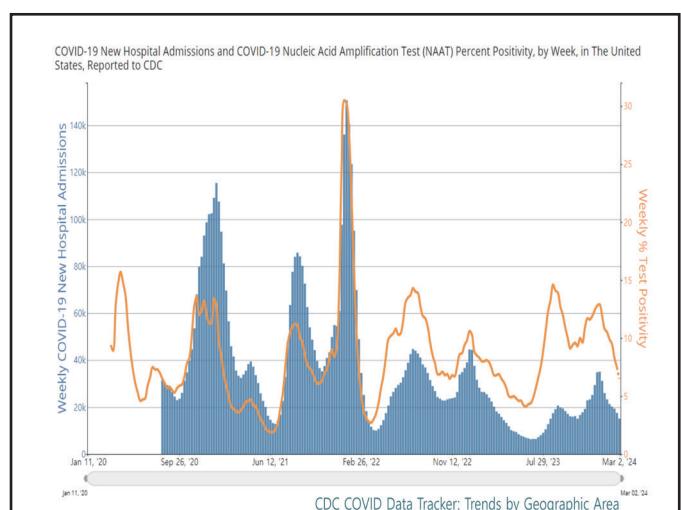
| | Total N=9825 | Alpha N=1312 | Delta N=4466 | Omicron – BA.1 N=1649 | Omicron – BA.2 N=1091 | Omicron – BA.4/BA.5 N=1307 | P value |
|--------------------------------|-----------------|-----------------|-----------------|--------------------------|--------------------------|-------------------------------|--------------------|
| Median (IQR) or n (%) | | | | | | | |
| Age in y | 60 (47-72) | 57 (44-66) | 57 (44-69) | 63 (51-73) | 66 (54-78) | 66 (53-78) | <.001 ^a |
| Age category | | | | | | | <.001 ^a |
| 18-49 | 2847 (29%) | 462 (35%) | 1527 (34%) | 361 (22%) | 209 (19%) | 288 (22%) | |
| 50-64 | 3033 (31%) | 487 (37%) | 1415 (32%) | 530 (32%) | 282 (26%) | 319 (24%) | |
| 65-74 | 2025 (21%) | 223 (17%) | 864 (19%) | 419 (25%) | 244 (22%) | 275 (21%) | |
| ≥75 | 1920 (20%) | 140 (11%) | 660 (15%) | 339 (21%) | 356 (33%) | 425 (33%) | |
| Death within 28 d of admission | | | | | | | <.001 ^a |
| No | 8848 (91%) | 1211 (92%) | 3934 (88%) | 1502 (91%) | 1045 (96%) | 1256 (96%) | |
| Yes | 877 (9%) | 101 (8%) | 532 (12%) | 147 (9%) | 46 (4%) | 51 (4%) | |
| Admitted to ICU | | | | | | | <.001 ^a |
| No | 6670 (68%) | 824 (63%) | 2711 (61%) | 1147 (70%) | 908 (83%) | 1080 (83%) | |
| Yes | 3155 (32%) | 488 (37%) | 1755 (39%) | 502 (30%) | 183 (17%) | 227 (17%) | |
| Oxygen support | | | | | | | <.001 ^a |
| Any oxygen support | | | | | | | <.001 ^a |
| No | 2417 (25%) | 240 (18%) | 778 (17%) | 408 (25%) | 437 (40%) | 554 (42%) | |
| Yes | 7408 (75%) | 1072 (82%) | 3688 (83%) | 1241 (75%) | 654 (60%) | 753 (58%) | |
| Highest O ₂ support | | | | | | | <.001 ^a |
| None | 2417 (25%) | 240 (18%) | 778 (17%) | 408 (25%) | 437 (40%) | 554 (42%) | |
| Low flow oxygen | 3890 (40%) | 529 (40%) | 1673 (37%) | 662 (40%) | 488 (45%) | 538 (41%) | |
| HFNC or NPPV | 1831 (19%) | 273 (21%) | 1034 (23%) | 314 (19%) | 90 (8%) | 120 (9%) | |
| IMV | 1513 (15%) | 227 (17%) | 873 (20%) | 243 (15%) | 76 (7%) | 94 (7%) | |
| ECMO | 174 (2%) | 43 (3%) | 106 (2%) | 22 (1%) | 0 (0%) | 1 (0%) | |

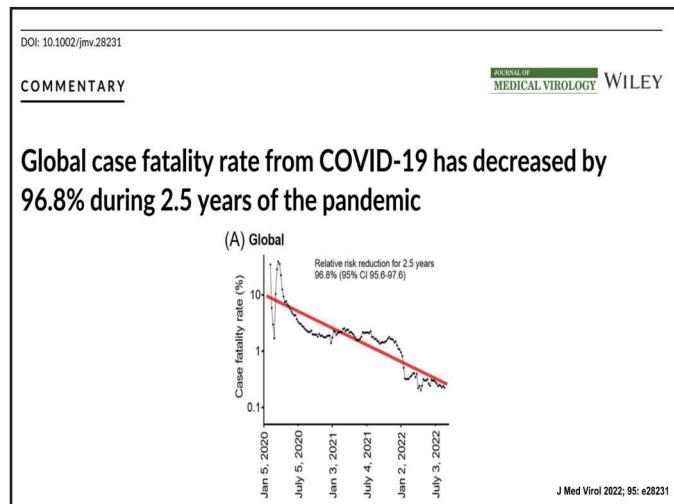
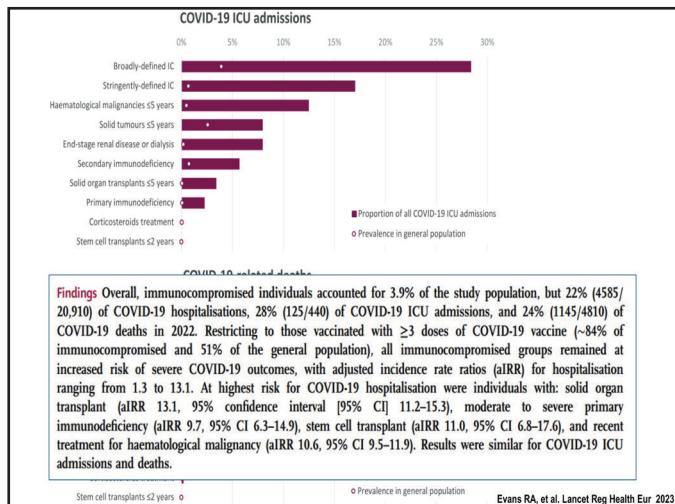
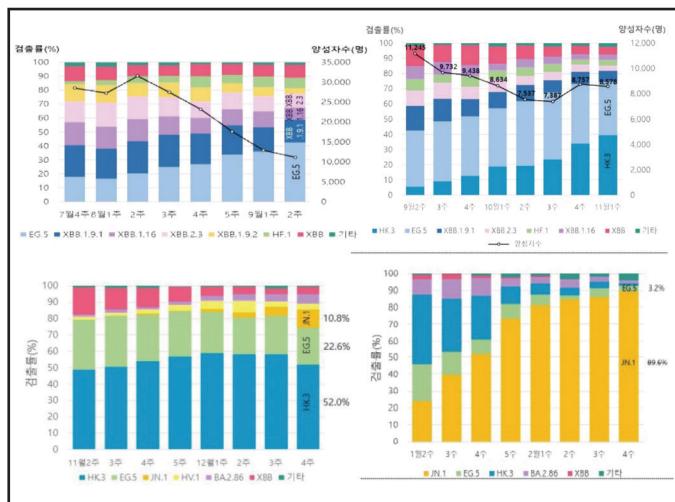
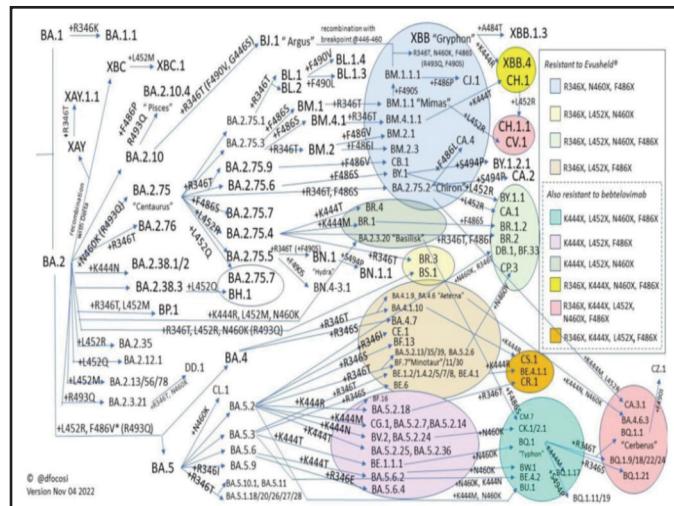
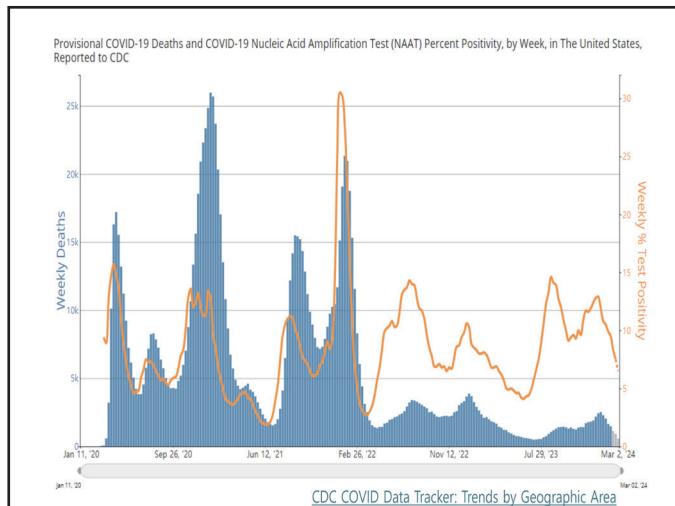
Clin Infect Dis 2023; 77: 547

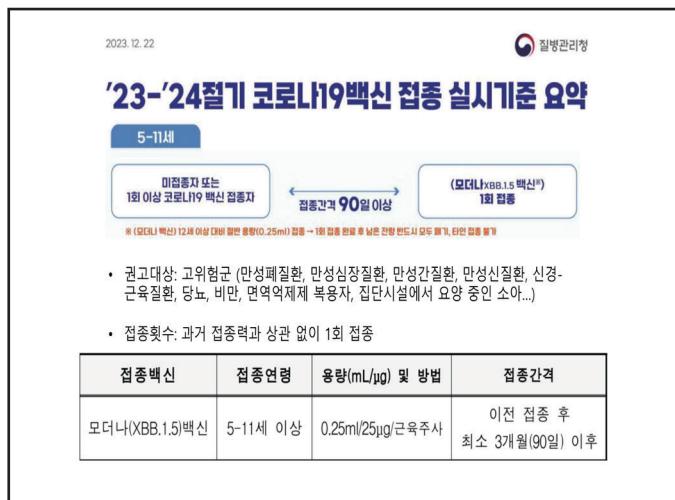
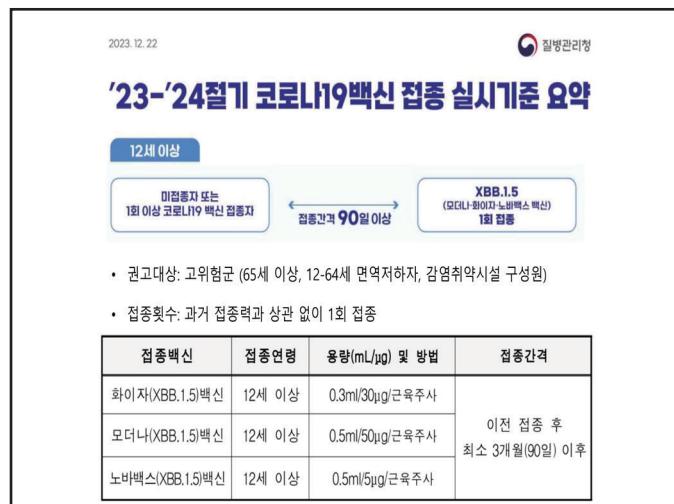
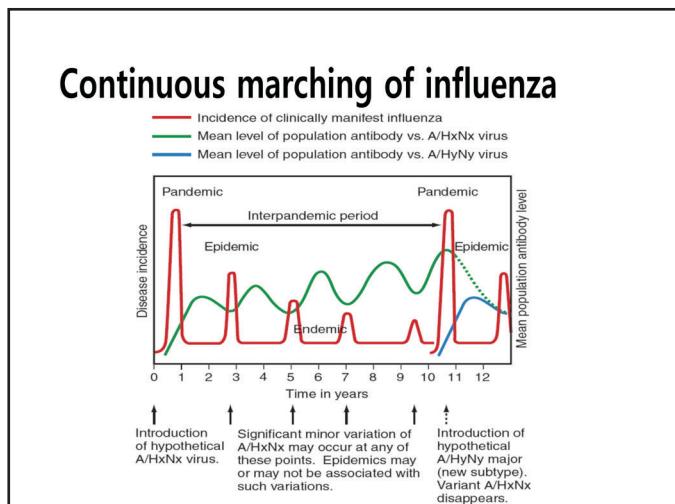


| | Number of studies | Number of estimates | Month 1 ^a | Month 2 ^a | Month 3 | Month 4 | Month 6 | Month 9 | Month 12 | Month 15 | Percentage point change in protection, 3-6 months (95% CI) ^b | Percentage point change in protection, 3-12 months (95% CI) ^b |
|--|-------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---|--|
| Previous infection | | | | | | | | | | | | |
| Hospital admission or severe disease | 6 | 16 | NA | 83.2% (72.1 to 90.5) | 82.5% (71.8 to 89.7) | 81.7% (71.4 to 88.9) | 80.1% (70.3 to 87.2) | 77.5% (67.5 to 85.1) | 74.6% (63.1 to 83.5) | 71.6% (57.1 to 82.6) | -2.4 (-5.1 to 4.7) | -7.8 (-20.9 to 12.1) |
| Any infection ^c | 10 | 64 | NA | 69.5% (57.6 to 79.2) | 65.2% (52.9 to 75.9) | 60.7% (48.7 to 72.1) | 51.2% (38.6 to 63.7) | 37.0% (26.7 to 49.6) | 24.7% (16.4 to 55.5) | 15.5% (9.9 to 23.6) | -14.0 (-12.0 to 51.9) | -40.5 (-33.9 to 51.9) |
| Hybrid immunity (primary series vaccination) | | | | | | | | | | | | |
| Hospital admission or severe disease | 5 | 23 | 95.7% (88.0 to 98.5) | 95.9% (88.5 to 98.6) | 96.0% (89.0 to 98.6) | 96.2% (89.4 to 98.7) | 95.5% (90.2 to 98.7) | 97.0% (90.9 to 99) | 97.4% (91.4 to 99.2) | NA | 0.50 (-2.2 to 2.1) | 1.3 (-4.3 to 7.4) |
| Any infection | 7 | 55 | 74.1% (64.8 to 81.6) | 71.6% (61.9 to 79.6) | 69.0% (58.9 to 75.7) | 66.2% (55.8 to 70.3) | 60.4% (49.6 to 70.3) | 51.1% (40.2 to 61.9) | 41.8% (31.5 to 52.8) | NA | -8.6 (-1.7 to 17.2) | -27.2 (-6.4 to 53.2) |
| Hybrid immunity (first booster vaccination) | | | | | | | | | | | | |
| Hospital admission or severe disease | 4 | 17 | 98.0% (92.9 to 99.5) | 97.6% (91.6 to 99.4) | 97.2% (90.0 to 99.3) | 96.7% (87.9 to 99.1) | 95.3% (81.9 to 98.9) | NA | NA | NA | -1.8 (-10.3 to 0.7) | NA |
| Any infection | 6 | 24 | 80.1% (72.5 to 86.1) | 74.8% (66.0 to 81.9) | 68.6% (58.8 to 76.9) | 61.6% (51.2 to 71.1) | 46.5% (36.0 to 57.3) | NA | NA | NA | -22.0 (-4.3 to 38.8) | NA |

Bobrovits N, et al. Lancet Infect Dis 2023







| 접종백신 | 이번 절기 이전 접종횟수 | 접종 횟수 | 용량(mL/µg) 및 방법 | 접종간격 | |
|------------------------------|----------------------------|----------|----------------------|-------------------------------|-----------------------------|
| | | | | 2차 | 3차 |
| 6개월-4세 화이자(XBB.1.5) 백신 | 미접종자 | 2 | 0.25mL/25µg/ 근육주사 | 1차접종 후 4-8주 * 최소접종간격: 24일 | - |
| | 미접종자 | 3 | 0.2mL/3µg/ 근육주사 | 1차접종 후 3-8주 * 최소접종간격: 17일 | 2차접종 후 8주 * 최소접종간격: 52일 |
| | 이전 화이자단기백신 1회 접종자 | 2 | | 이전 접종 후 3-8주 * 최소접종간격: 17일 | 2차접종 후 8주 * 최소접종간격: 52일 |
| | 이전 화이자단기백신 2회 이상 접종자 | 1 | | - | 이전 접종 후 8주 * 최소접종간격: 52일 |

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2023-24

Summary of Recommendations

For additional information: MMWR Recomm Rep 2023;72(No. RR-2), at <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/flu.html>. This document is available in HTML format at <https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm>.

| |
|--|
| Quadrivalent IIVs (IIV4s)—Standard-dose—Egg-based (15 µg HA per virus component in 0.5 mL; 7.5 µg HA per virus component in 0.25 mL) |
| Quadrivalent IIV (ccIIV4)—Standard-dose—Cell culture-based (15 µg HA per virus component in 0.5 mL) |
| Quadrivalent IIV (HD-IIV4)—High-dose—Egg-based (60 µg HA per virus component in 0.7 mL) |
| Fluzone High-Dose Quadrivalent 0.7 mL prefilled syringe ≥65 yrs ≥65 yrs–0.7 mL Sanofi Pasteur |
| Adjuvanted quadrivalent IIV4 (aIIV4)—Standard-dose with MF59 adjuvant—Egg-based (15 µg HA per virus component in 0.5 mL) |
| Fluad Quadrivalent 0.5 mL prefilled syringe ≥65 yrs ≥65 yrs–0.5 mL Seqirus |
| Quadrivalent RIV (RIV4)—Recombinant HA (45 µg HA per virus component in 0.5 mL) |
| Flublok Quadrivalent 0.5 mL prefilled syringe ≥18 yrs ≥18 yrs–0.5 mL Sanofi Pasteur |

Flu Vaccines for Adults 65+

On June 22, 2022, CDC's Advisory Committee for Immunization Practices voted to recommend the use of the following flu vaccines in adults aged 65 and older over standard-dose flu vaccines, when available.

| Flu Vaccine Type | How is it different from standard-dose flu vaccine? | What age groups is it approved for? | Brand Name | Manufacturer |
|-------------------------|---|-------------------------------------|--------------------------------|----------------------|
| High-Dose Flu Vaccine | High-dose flu vaccine contains four times the antigen, the part of the virus that triggers the immune system, to help provide more protection against flu viruses, than standard-dose inactivated flu vaccines. | Adults 65 years and older | Fluzone High-Dose Quadrivalent | Sanofi Pasteur, Inc. |
| Recombinant Flu Vaccine | Recombinant flu vaccine is a newer type of inactivated flu vaccine technology and contains three times the antigen of standard-dose flu vaccine that help your body build a stronger immune response to protect against flu viruses, than standard-dose inactivated flu vaccines. | Adults 18 years and older | Flublok Quadrivalent | Sanofi Pasteur, Inc. |
| Adjuvanted Flu Vaccine | Adjuvanted flu vaccine is a standard-dose flu vaccine that contains an adjuvant, an ingredient added to a vaccine to help create a stronger immune response to vaccination. | Adults 65 years and older | FluAD Quadrivalent | Seqirus |

There are many flu vaccines approved for use in people 65 and older. If these three vaccines above are not available, people should get whatever approved vaccine is available and not wait to get vaccinated.

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

get vaccinated:
cdc.gov/flu

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

Respiratory Syncytial Virus Infection (RSV)

RSV immunizations are recommended only for these groups:

- **Adults ages 60 and older:** [Two RSV vaccines](#) (GSK Arexvy and Pfizer Abrysvo) have been licensed by FDA and recommended by CDC for adults ages 60 and older, using shared clinical decision-making.
- **Pregnant women:** [One RSV vaccine](#) (Pfizer Abrysvo) has been licensed and recommended during weeks 32 through 36 of pregnancy to protect infants.
- **Infants and some young children:** An [RSV preventive antibody](#) has been licensed and recommended for infants and some young children.

Morbidity and Mortality Weekly Report

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Michael Melgar, MD¹; Amadea Britton, MD¹; Lauren E. Roper, MPH¹; H. Keipp Talbot, MD²; Sarah S. Long, MD³; Camille N. Korton, MD⁴; Fiona P. Havers, MD¹

TABLE 1. Efficacy of 1 dose of GSK respiratory syncytial virus RSVpref3 vaccine against respiratory syncytial virus-associated disease among adults aged ≥60 years — multiple countries, 2021–2023

| Efficacy evaluation period | Vaccine efficacy against outcome* | | Vaccine efficacy against outcome, % (95% CI)* | | |
|---------------------------------------|-----------------------------------|---|---|----------------------------------|---|
| | RSV-associated LRTD [†] | RSV-associated medically attended LRTD [†] | Efficacy evaluation period | RSV-associated LRTD [†] | RSV-associated medically attended LRTD [†] |
| Season 1 [‡] | 82.6 (57.9–94.4)** | 87.5 (58.9–97.6)†† | Season 1 [‡] | 88.9 (53.6–98.7) | 84.6 (32.0–98.3) |
| Season 2 ^{§§} | 56.1 (28.2–74.4)†† | —** | Season 2 (interim)** | 78.6 (23.2–96.1) | —†† |
| Combined seasons 1 and 2 (interim)*** | 74.5 (60.0–84.5)†† | 77.5 (57.9–89.0)†† | Combined seasons 1 and 2 (interim)§§ | 84.4 (59.6–95.2) | 81.0 (43.5–95.2) |

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

Morbidity and Mortality Weekly Report

Use of the Pfizer Respiratory Syncytial Virus Vaccine During Pregnancy for the Prevention of Respiratory Syncytial Virus–Associated Lower Respiratory Tract Disease in Infants: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Katherine E. Fleming-Dutra, MD^{1,2*}; Jefferson M. Jones, MD^{3,4*}; Lauren E. Roper, MPH¹; Mila M. Prill, MSPH¹; Ismael R. Ortega-Sánchez, PhD¹; Danielle L. Moulla, MPH¹; Megan Wallace, DRPH¹; Monica Godfrey, MPH¹; Karen R. Broder, MD⁵; Naomi K. Tepper, MD⁶; Oliver Brooks, MD⁷; Pablo J. Sánchez, MD⁸; Camille N. Korton, MD⁹; Barbara E. Mahon, MD¹⁰; Sarah S. Long, MD¹¹; Meredith L. McMoree, MD¹²

TABLE 1. Effect estimates for the Pfizer maternal RSVpref vaccine for the trial dosing interval and the approved dosing interval

| Outcome | Trial dosing interval (24–36 weeks' gestation) [†] | | Approved dosing interval (32–36 weeks' gestation) [§] | |
|--|--|--|---|--|
| | VE or RR (CI)* | | VE or RR (CI)* | |
| Benefits (efficacy against outcome), (VE) assessed at age 0–180 days | | | | |
| Medically attended RSV-associated LRTI in infants | 51.3 (29.4 to 66.8) [¶] | | 57.3 (29.8 to 74.7) | |
| Severe medically attended RSV-associated LRTI in infants** | 69.4 (44.3 to 84.1) [¶] | | 76.5 (41.3 to 92.1) | |
| Hospitalization for RSV-associated LRTI | 56.8 (10.1 to 80.7) ^{††} | | 48.2 (–22.9 to 79.6) | |
| Intensive care unit admission from RSV hospitalization in infants | 42.9 (–124.8 to 87.7) | | One event in the vaccine group | |
| Mechanical ventilation from RSV hospitalization in infants | 100 (–9.1 to 100) | | Two events in the placebo group | |
| All-cause medically attended LRTI in infants | 2.5 (–17.9 to 19.4) ^{††} | | Zero events in the vaccine group | |
| All-cause hospitalization for LRTI in infants | 28.9 (–2.0 to 50.8) | | Two events in the placebo group | |
| Harms (RR) ^{§§} | | | | |
| Serious adverse events in pregnant persons ^{¶¶} | 1.06 (0.95 to 1.17) | | 1.02 (0.87 to 1.20) | |
| Reactogenicity (grade 3 or higher systemic reactions) in pregnant persons*** | 0.97 (0.72 to 1.31) | | 0.98 (0.62 to 1.54) | |
| Serious adverse events in infants ^{††} | 1.01 (0.91 to 1.11) | | 1.04 (0.90 to 1.20) | |
| Preterm birth (<37 weeks' gestational age) | 1.20 (0.99 to 1.46) | | 1.15 (0.82 to 1.61) | |