

Respiratory viruses: 2026 updates

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Disclosures

- Past research grants paid to Fred Hutch from Shionogi and Pfizer
- Current PI for a Pfizer-funded study of a SARS-CoV-2 antiviral – unrelated to contents of this talk

Learning objectives

1. Influenza

- a) Summarize the data for novel seasonal influenza mRNA vaccines
- b) Compare the effectiveness of high-dose vs standard-dose influenza vaccination

2. Respiratory Syncytial Virus (RSV)

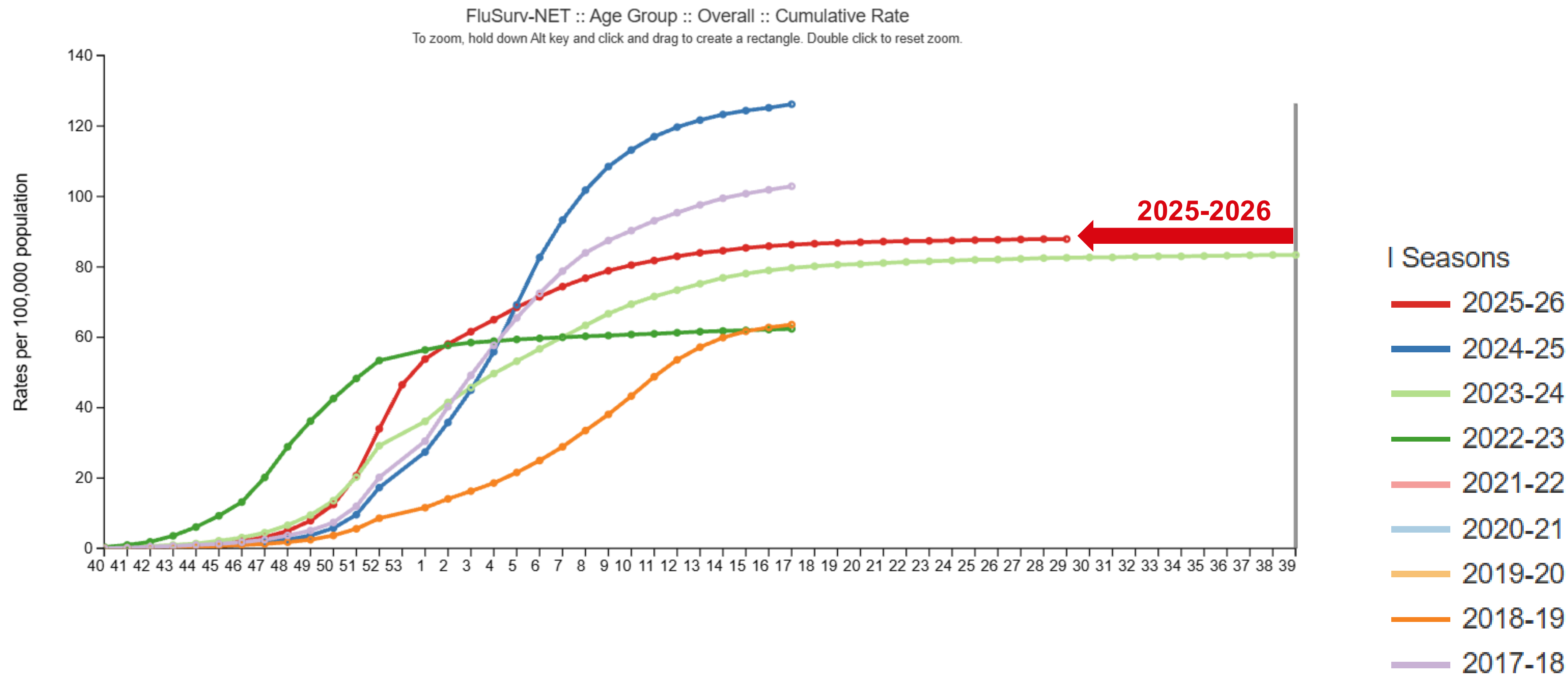
- a) Synthesize the evidence on RSV vaccine durability in older adults
- b) Compare vaccines and monoclonal antibodies for infant RSV prevention

3. COVID-19

- a) Discuss indications for Covid-19 post-exposure prophylaxis
- b) Estimate Covid-19 PEP effectiveness
- c) Describe updated data on Covid-19 vaccine efficacy

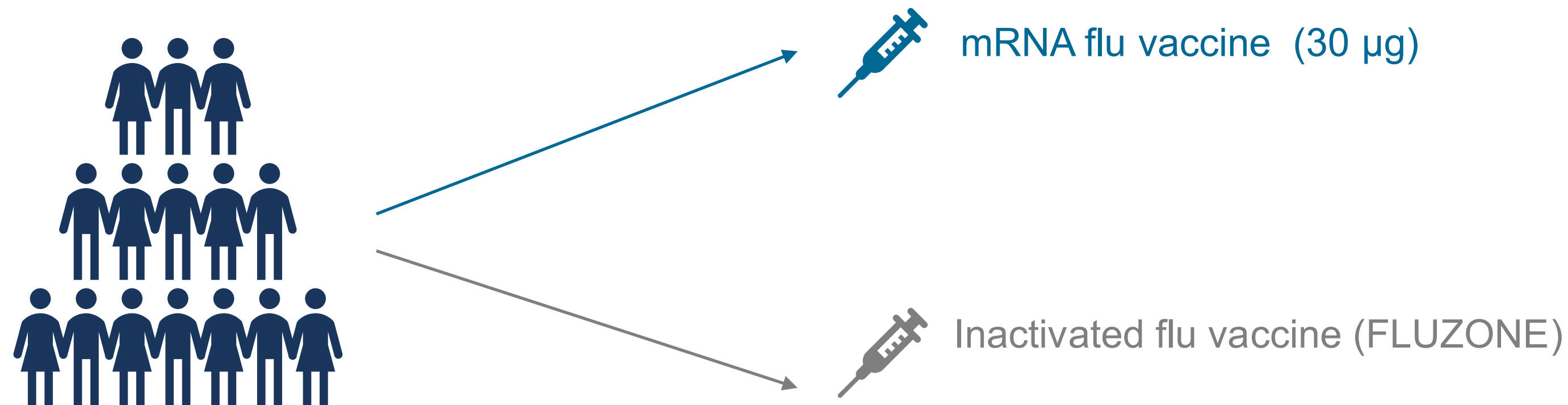
What's new in flu?

2025-26 flu season: confirmed flu hospitalizations



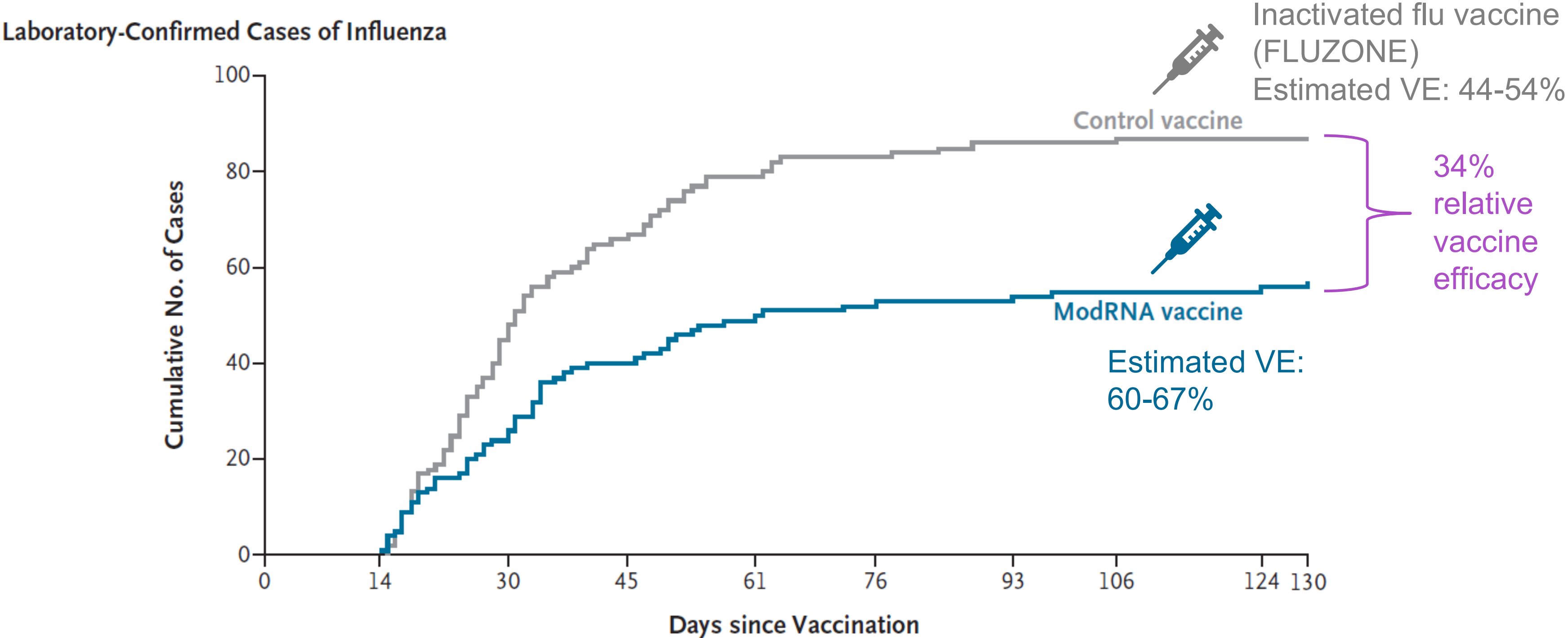
mRNA influenza vaccines

Phase 3 trial (Pfizer vaccine)



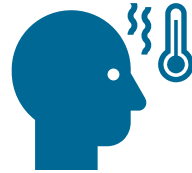
- 18,476 adults aged 18-64
- Healthy
- 25% with ≥ 1 risk factor for severe influenza

mRNA Influenza Vaccines: Efficacy



mRNA Influenza Vaccines: Safety

mRNA vaccine

- Greater reactogenicity
- Fever in 5.6% 
- No cases of myocarditis

Inactivated vaccine

- Reactions less common
- Fever in 1.7%

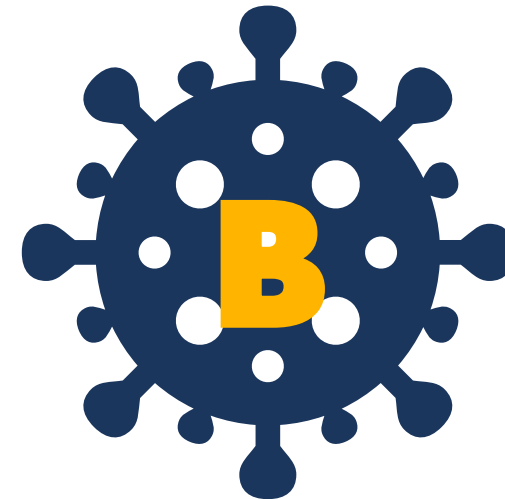
mRNA influenza vaccines

Takeaways and limitations

Promising results

- ✓ Efficacy
- ✓ Safety

No data for influenza B



Unknown efficacy in other populations



High-dose influenza vaccination

More evidence to support this



High-Dose Influenza Vaccine Effectiveness against Hospitalization in Older Adults

N.D. Johansen,^{1,2} D. Modin,^{1,2} M.M. Loiacono,^{3,4} R.C. Harris,⁵ M. Dufournet,⁶ C.S. Larsen,^{7,8} L. Larsen,⁹ L. Wiese,¹⁰ M. Dalager-Pedersen,^{11,12} B.L. Claggett,¹³ K.H. Janstrup,^{1,2} K.V. Bartholdy,^{1,2} K.F. Bernholm,^{1,2} J.I.-M.H. Borchsenius,^{1,2} F.S. Davidovski,^{1,2} L.W. Davodian,^{1,2} M. Dons,^{1,2} L.S. Duus,^{1,2} C. Espersen,^{1,2} F.H. Fussing,^{1,2} A.M.R. Jensen,^{1,2} N.E. Landler,^{1,2} A.C.F. Langhoff,^{1,2} M.C.H. Lassen,^{1,2} A.B. Nielsen,^{1,2} C.I. Ottosen,^{1,2} M. Sengeløv,^{1,2} K.G. Skaarup,^{1,2} S.D. Solomon,¹² M.J. Landray,¹⁴ G.H. Gislason,^{1,15,16} L. Køber,^{15,17} L. Ralfkiaer,¹⁸ J. Nealon,¹⁹ P. Sivapalan,^{15,20} C.J.-M. Martel,²¹ J.U.S. Jensen,^{15,20} and T. Biering-Sørensen^{1,2,17,22}

JAMA Cardiology | Original Investigation

High-Dose vs Standard-Dose Influenza Vaccine and Cardiovascular Outcomes in Older Adults A Prespecified Secondary Analysis of the DANFLU-2 Randomized Clinical Trial

Niklas Dyrby Johansen, MD, PhD; Daniel Modin, MD; Matthew M. Loiacono, PhD; Rebecca C. Harris, MBioch, MSc, PhD; Marine Dufournet, PhD; Carsten Schade Larsen, MD, DMSc; Lykke Larsen, MD, PhD; Lothar Wiese, MD, PhD; Michael Dalager-Pedersen, MD, PhD; Brian L. Claggett, PhD; Kira Hyldekær Janstrup, PhD; Katja Vu Bartholdy, MD; Katrine Feldballe Bernholm, MD; Julie Inge-Marie Helene Borchsenius, MD; Filip Soeskov Davidovski, MD; Lise Witten Davodian, MD; Maria Dons, MD; Lisa Steen Duus, MD; Caroline Espersen, MD; Frederik Holme Fussing, MD; Anne Marie Reimer Jensen, MD; Nino Emanuel Landler, MD, PhD; Adam Cadovius Femerling Langhoff, MD; Mats Christian Højbjerg Lassen, MD; Anne Bjerg Nielsen, MD; Camilla Ikast Ottosen, MD; Morten Sengeløv, MD; Kristoffer Grundtvig Skaarup, MD; Manan Pareek, MD, PhD, MSc; Scott D. Solomon, MD; Martin J. Landray, PhD; Gunnar H. Gislason, MD, PhD; Lars Køber, MD, DMSc; Pradeesh Sivapalan, MD, PhD; Cyril Jean-Marie Martel, PhD; Jens Ulrik Stæhr Jensen, MD, PhD; Tor Biering-Sørensen, MD, MSc, MPH, PhD

Effectiveness of high-dose influenza vaccine against hospitalisations in older adults (FLUNITY-HD): an individual-level pooled analysis



Niklas Dyrby Johansen, Daniel Modin, Jacobo Pardo-Seco, Carmen Rodriguez-Tenreiro-Sánchez, Matthew M Loiacono, Rebecca C Harris, Marine Dufournet, Robertus van Aalst, Ayman Chit, Carsten Schade Larsen, Lykke Larsen, Lothar Wiese, Michael Dalager-Pedersen, Brian L Claggett, Kira Hyldekær Janstrup, Carmen Duran-Parrondo, Marta Piñeiro-Sotelo, Martín Cribeiro-González, Mónica Conde-Pájaro, Susana Mirás-Carballal, Juan-Manuel González-Pérez, Scott D Solomon, Pradeesh Sivapalan, Cyril Jean-Marie Martel, Jens Ulrik Stæhr Jensen, Federico Martínón-Torres, Tor Biering-Sørensen, for the DANFLU-2 Study Group* and the GALFLU Trial Team*

What's new in RSV

RSV prevention arsenal

Adults aged ≥ 60 and aged 50-59 at $\uparrow$ risk

Pfizer - ABRYSVO



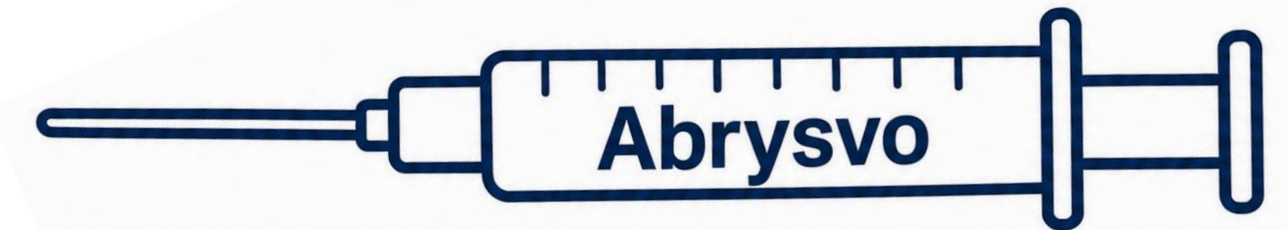
GSK - Arexvy



Moderna

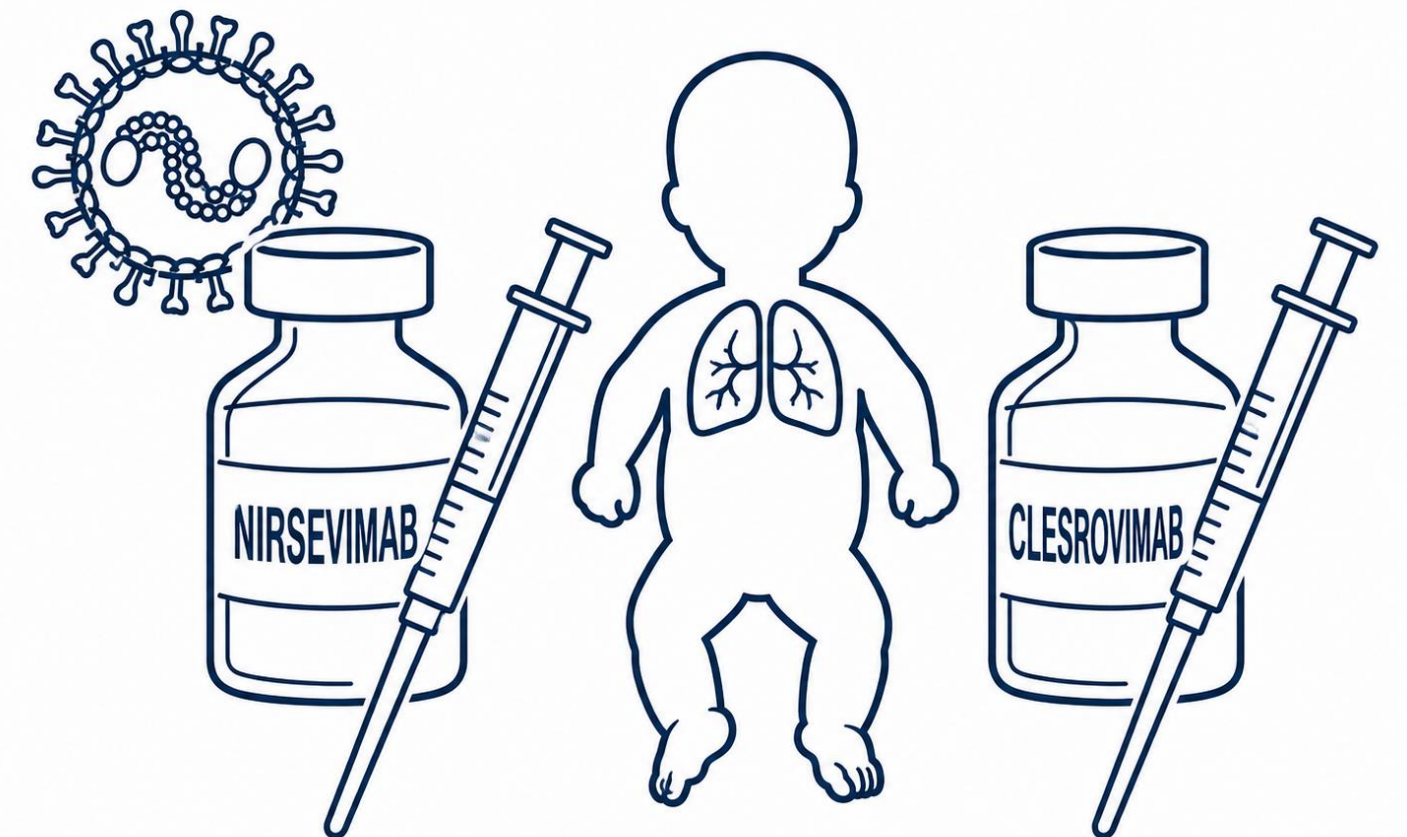


Infants:



For pregnant women at 32-36 weeks gestational age

Monoclonals for infants:



RSV vaccines for older adults: durability and boosters

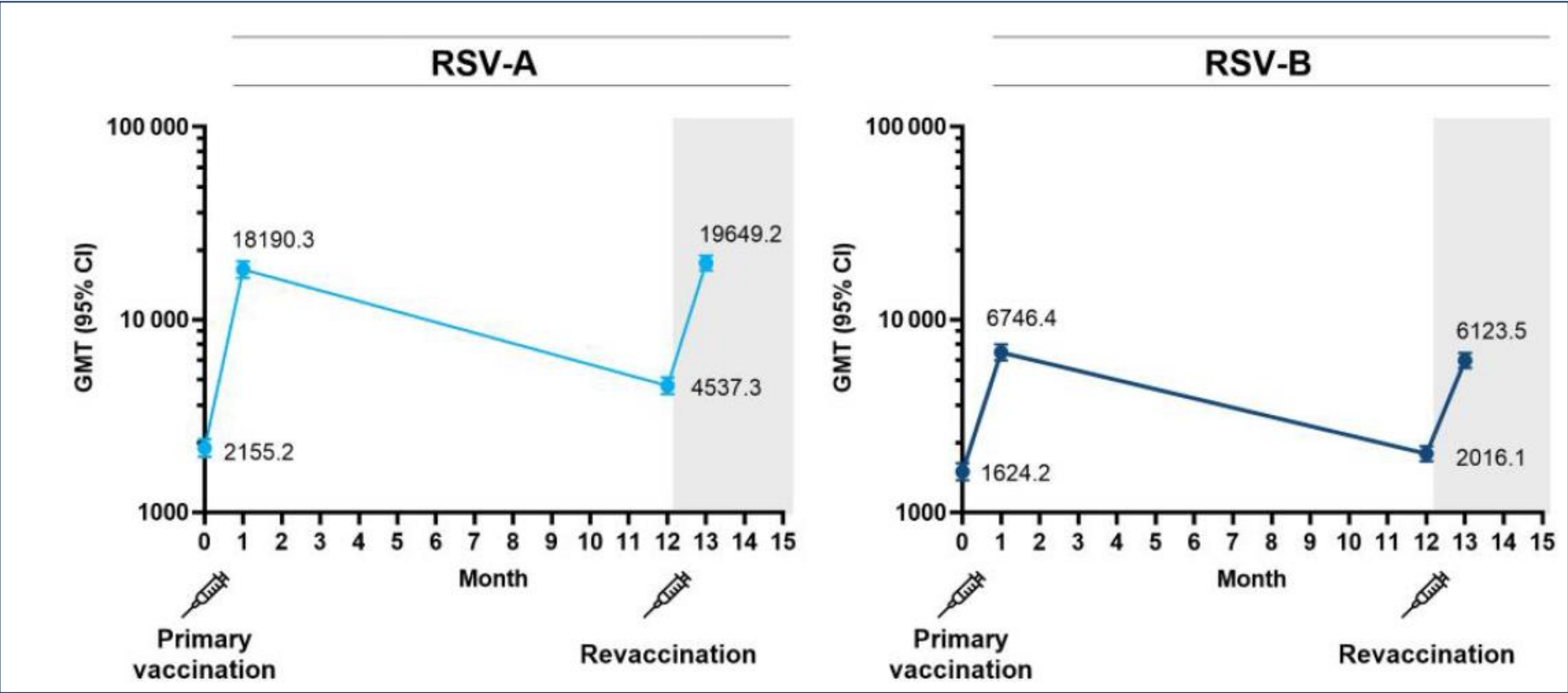
Research

JAMA Internal Medicine | [Original Investigation](#)

Durability of Respiratory Syncytial Virus Vaccine Effectiveness Among US Veterans

Kristina L. Bajema, MD; David P. Bui, PhD; Lei Yan, PhD; Yuli Li, MS; Nallakkandi Rajeevan, PhD; Robert Vergun, PhD; Vyshnika Sriskantharajah, MS; Denise M. Hynes, PhD; Kristin Berry, PhD; Yuan Huang, PhD; Hung-Mo Lin, PhD; Mihaela Aslan, PhD; George N. Ioannou, BMBC

mRNA RSV vaccine boosters



Monoclonal antibodies: nirsevimab & clesrovimab

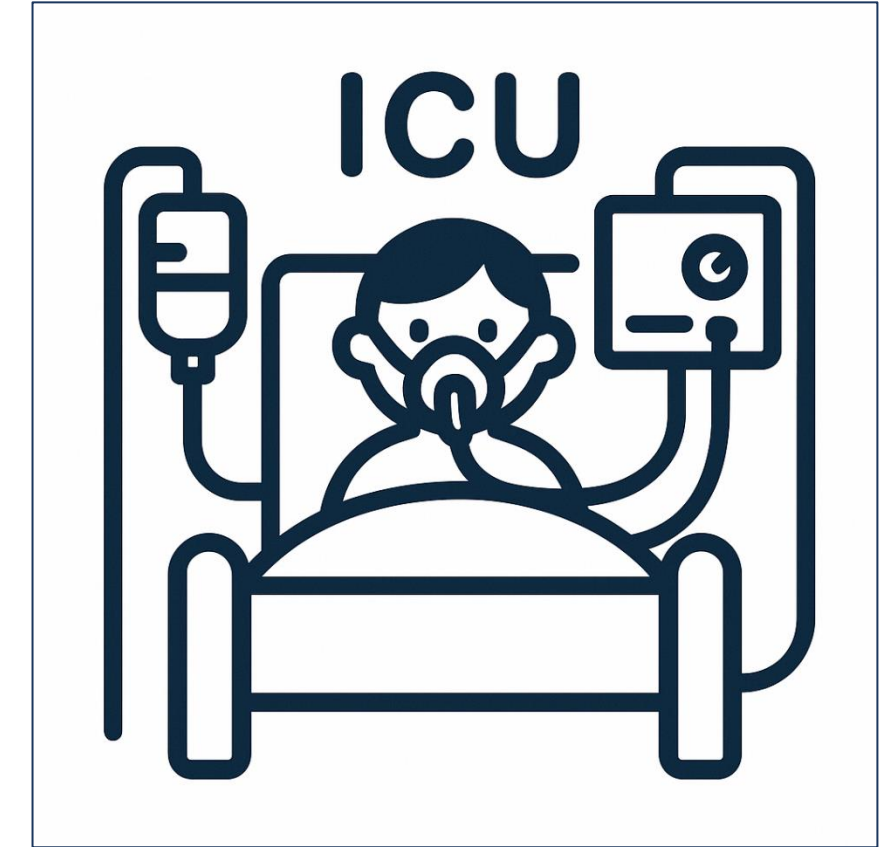
Highly effective in preventing adverse outcomes due to RSV:



Medically-attended RSV
5 studies:
17-89% effective



Hospitalization
13 studies:
64% - 93% effectiveness

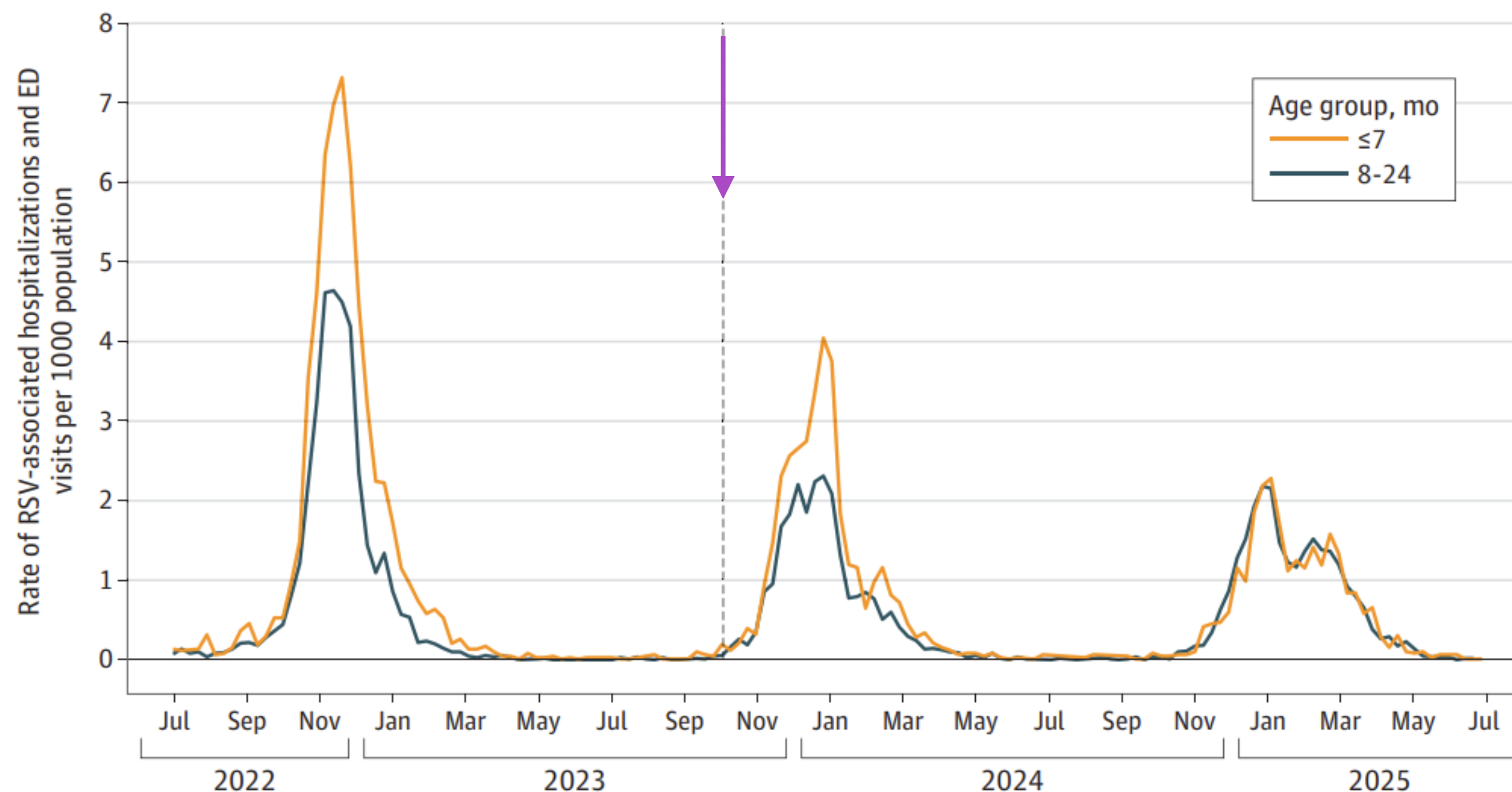


ICU admission
6 studies:
51-91% effectiveness

Original Investigation | Public Health

RSV Prevention Products and Severe RSV-Associated Disease Among Infants

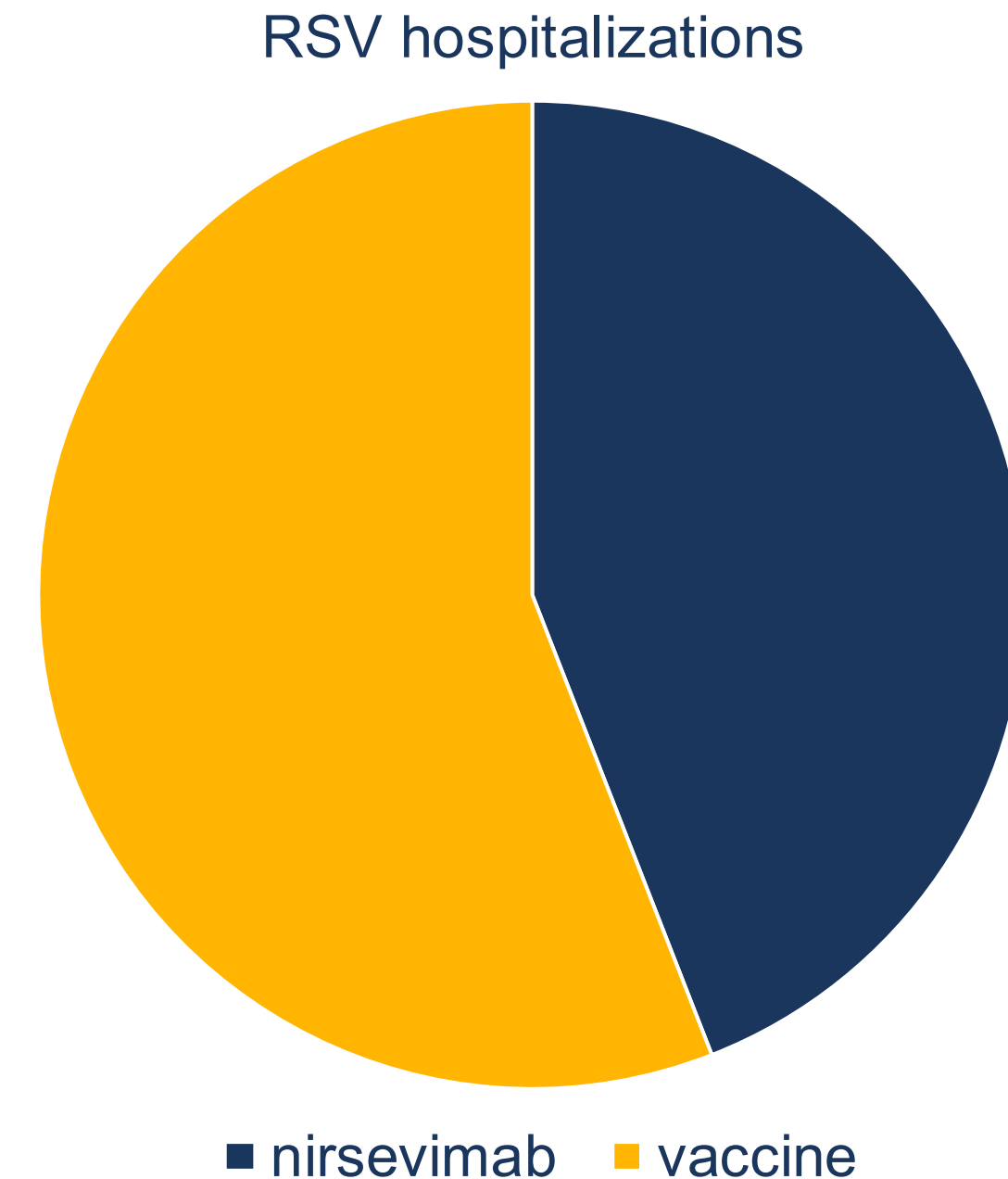
Julia C. Bennett, PhD; Elyse Bevers, MPH; Sara Chronister, MPH; Ashley McHugh, MPH; Maham Choudry, MPH; Mary Huynh, MPH; Janet A. Englund, MD; Scott Lindquist, MD; Michelle L. Holshue, MPH



Infant RSV prevention: direct comparison

French study of 42,560 infants

- Followed for ~84 days
- 481 hospitalizations for RSV-associated lower respiratory tract infection
 - 212 (44.1%) occurred in nirsevimab group
 - 269 (55.9%) in vaccine group
- Compared with the vaccine, nirsevimab was associated with a lower risk of hospitalization for RSV-associated LRTI (aHR, 0.74) and lower risk of PICU admission (aHR 0.58) and ventilator support (aHR 0.57)

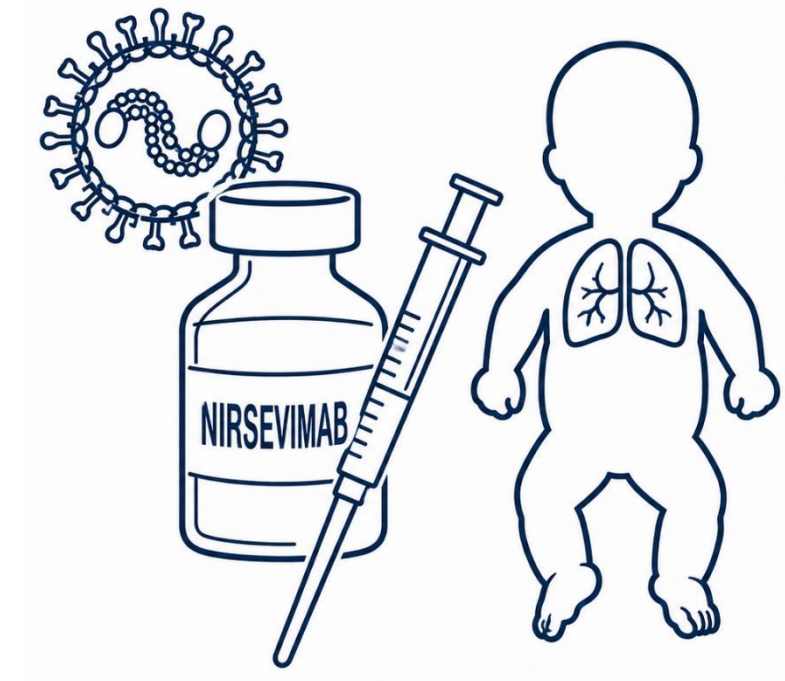


Infant RSV prevention: parental preferences

Vaccination during pregnancy: 32-36 weeks



Infant mAb: Single dose, long-acting IM



- 2 national, cross-sectional surveys in 2024
- 174 pregnant women and 1,765 parents of young children
- Both groups preferred maternal RSV vaccination for protecting infants against RSV infection (~50% vs 5-10%)

RSV prevention in infants: take home points



Covid updates

Covid PEP: ensitrelvir (XOCOVA)

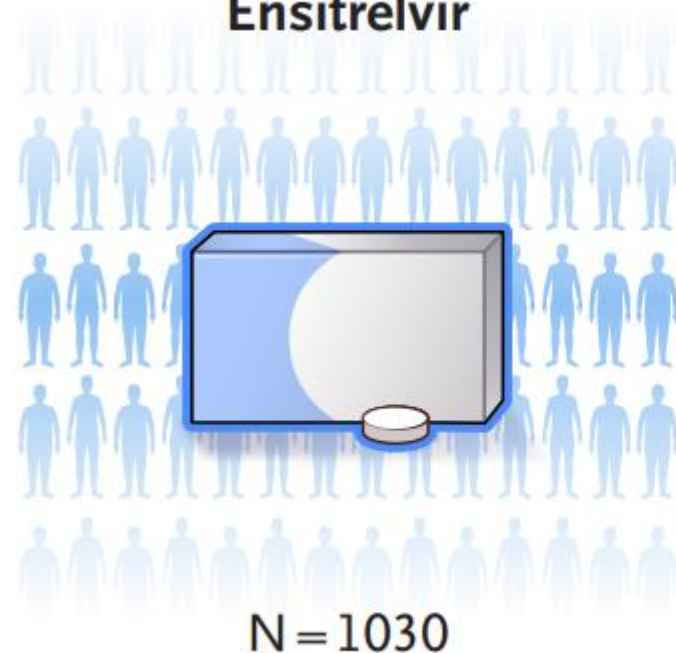


Participants

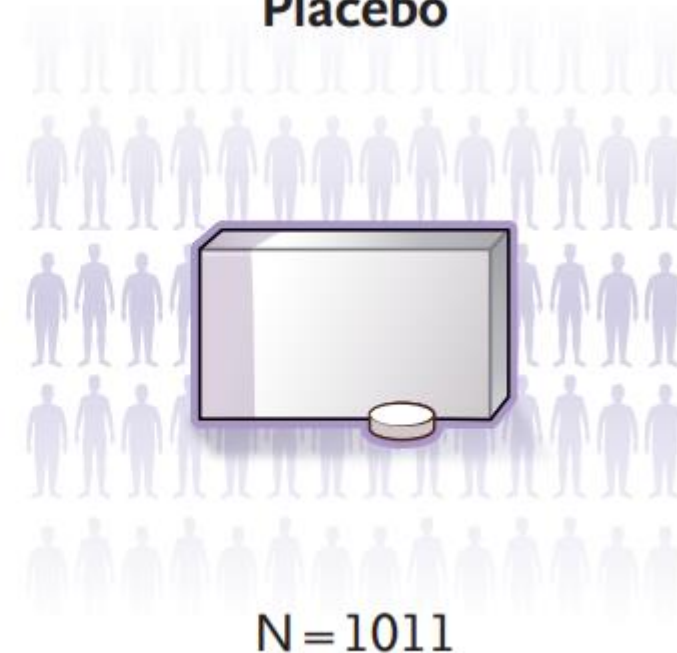
- 2041 household contacts
- Mean age, 42 years
- Women: 59%; Men: 41%



Ensitrelvir

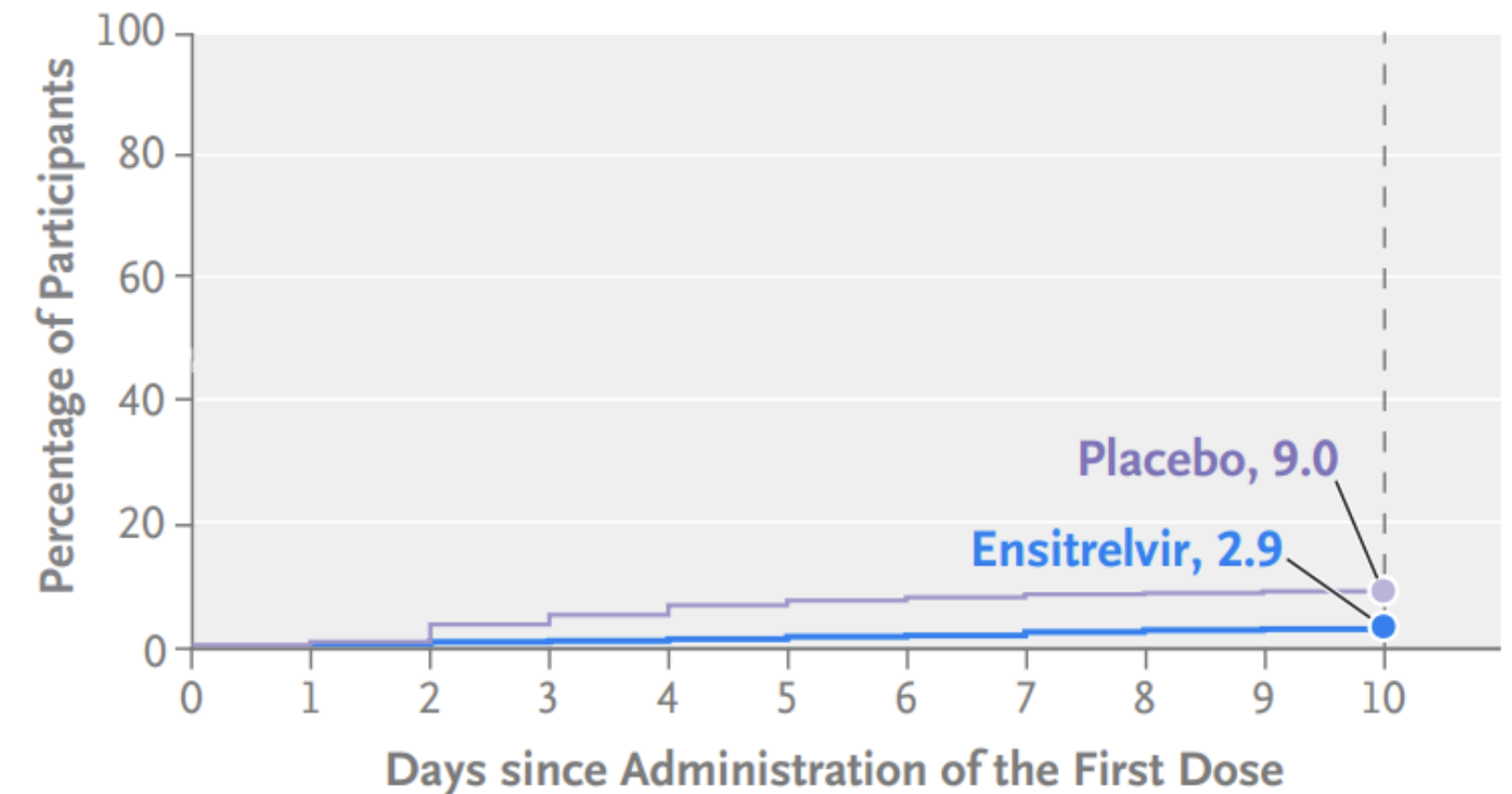


Placebo



Laboratory-Confirmed Covid-19

Risk ratio, 0.33 (95% CI, 0.22 to 0.49); $P < 0.001$



Primary end point: Covid-19 by day 10
(PCR-confirmed and presence of ≥ 1 Covid-19 symptom lasting ≥ 48 hours)

Covid PEP: ensitrelvir (XOCOVA)

- Household contacts (Covid $\ominus$)
- Within 72 hours of index patient symptom onset
- 5-day course
- ~67% efficacy



COVID-19 vaccines: they still work!



Original Investigation | Infectious Diseases
Estimated Effectiveness of 2024-2025 COVID-19 Vaccination Against Severe COVID-19
Kevin C. Ma, PhD; Alexander Webber, MPH; Adam S. Luring, MD, PhD; Emily Bendall, PhD; Leigh K. Papalambros, MPH; Basmah Safdar, MD, MSc; Adit A. Ginde, MD, MPH; Ithan D. Peltan, MD, MSc; Samuel M. Brown, MD, MS; Manjusha Gaglani, MBBS; Shekhar Ghamande, MD; Cristie Columbus, MD; Nicholas M. Mohr, MD, MS; Kevin W. Gibbs, MD; David N. Hager, MD, PhD; Matthew E. Prekker, MD, MPH; Michelle N. Gong, MD, MS; Amira Mohamed, MD; Nicholas J. Johnson, MD; Akram Khan, MBBS; Catherine L. Hough, MD, MSc; Abhijit Duggal, MD, MPH, MSc; Jennifer G. Wilson, MD, MS; Nida Qadir, MD; Steven Y. Chang, MD, PhD; Christopher Mallow, MD, MHS; Laurence W. Busse, MD; Jennie H. Kwon, DO, MSCI; Matthew C. Exline, MD, MPH; Ivana A. Vaughn, PhD, MPH; Mayur Ramesh, MD; Jarrod M. Mosier, MD; Aleda M. Leis, PhD, MS; Estelle S. Harris, MD; Adrienne Baughman, BS; Sydney A. Cornelison, MPH; Paul W. Blair, MD, MHS; Cassandra A. Johnson, MS; Nathaniel M. Lewis, PhD; Sascha Ellington, PhD, MSPH; Todd W. Rice, MD, MSc; Carlos G. Grijalva, MD, MPH; H. Keipp Talbot, MD, MPH; Jonathan D. Casey, MD, MSCI; Natasha Halasa, MD, MPH; James D. Chappell, MD, PhD; Yuwei Zhu, MD, MS; Wesley H. Self, MD, MPH; Fatimah S. Dawood, MD; Diya Surie, MD; for the Investigating Respiratory Viruses in the Acutely Ill (IVY) Network

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Association of 2024–2025 Covid-19 Vaccine with Covid-19 Outcomes in U.S. Veterans

Miao Cai, Ph.D.,^{1,2} Yan Xie, Ph.D.,¹⁻⁴ and Ziyad Al-Aly, M.D.^{1,2,5-7}

ABSTRACT

Take home points

Conclusions

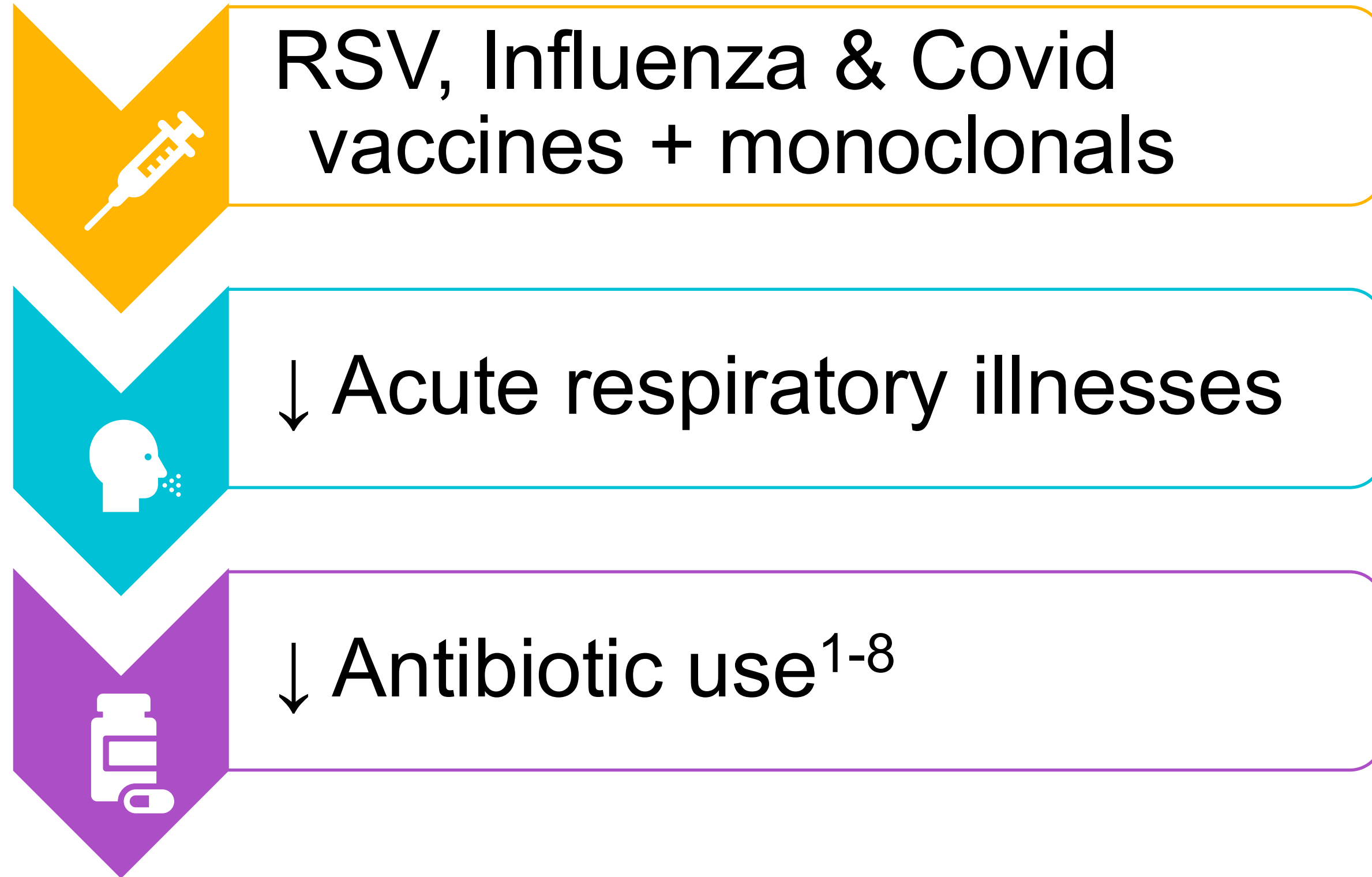
Influenza

RSV

COVID-19



Vaccines and antimicrobial stewardship



Thank you

Teaching Peer Evaluation
for Dr. Denise McCulloch



Additional slides for reference

RSV vaccine: ACIP recommendations

- Adults ≥ 75 years of age: receive a single dose of RSV vaccine
- Adults 50–74 years of age at increased risk of severe RSV disease: receive a single dose of RSV vaccine
- Single lifetime dose