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COVID-19 Press Briefing

August 18, 2021

COVID-19 Response Team Update

Jeff Zients

Update from the Surgeon General of the United States

Dr. Vivek Murthy

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CDC Update

Dr. Rochelle P. Walensky

Vaccine Effectiveness against Infection has Decreased over Time

MMWR Morbidity and Mortality Weekly Report

New COVID-19 Cases and Hospitalizations Among Adults, by Vaccination Status — New York, May 3–July 25, 2021

Eli S. Rosenberg, PhD[1,2]; David R. Holtgrave, PhD[2]; Vajeera Dorabawila, PhD[1]; MaryBeth Conroy, MPH[1]; Danielle Greene, DrPH[1]; Emily Lutterloh, MD[1,2]; Bryon Backenson, MS[1,2]; Dina Hoefer, PhD[1]; Johanne Morne, MS[1]; Ursula Bauer, PhD[1]; Howard A. Zucker, MD, JD[1]

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CSH Cold Spring Harbor Laboratory BMJ Yale

Comparison of two highly-effective mRNA vaccines for COVID-19 during periods of Alpha and Delta variant prevalence

Arjun Puranik[1+], Patrick J. Lenehan[1+], Eli Silvert[1], Michiel J.M. Niesen[1], Juan Corchado-Garcia[1], John C. O'Horo[2], Abinash Virk[2], Melanie D. Swift[2], John Halamka[2], Andrew D. Badley[2], A.J. Venkatakrishnan[1], Venky Soundararajan[1]

- NY State: Age-adjusted VE against new COVID-19 *diagnoses* declined from 92% to 80%
- Mayo Clinic: VE against Delta variant infection decreased for both mRNA vaccines
  - Pfizer: 76% to 42%
  - Moderna: 86% to 76%

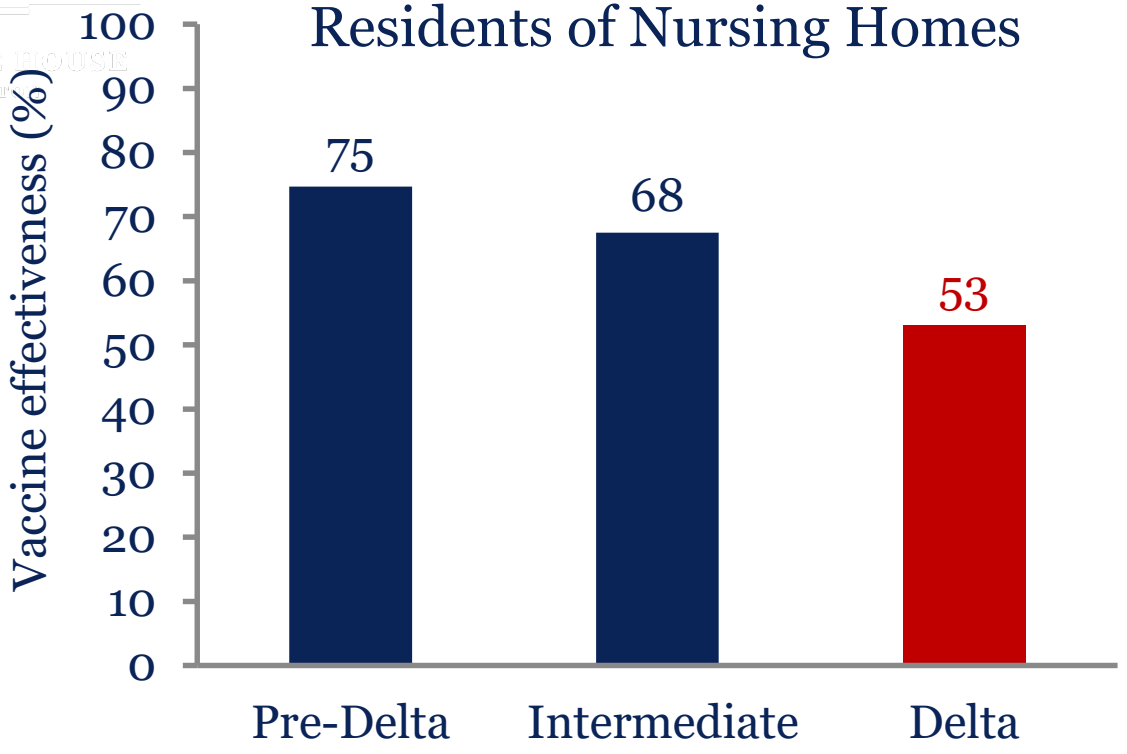
Vaccines Effectiveness Against Infection is Decreasing in those Most Vulnerable

MMWR Morbidity and Mortality Weekly Report

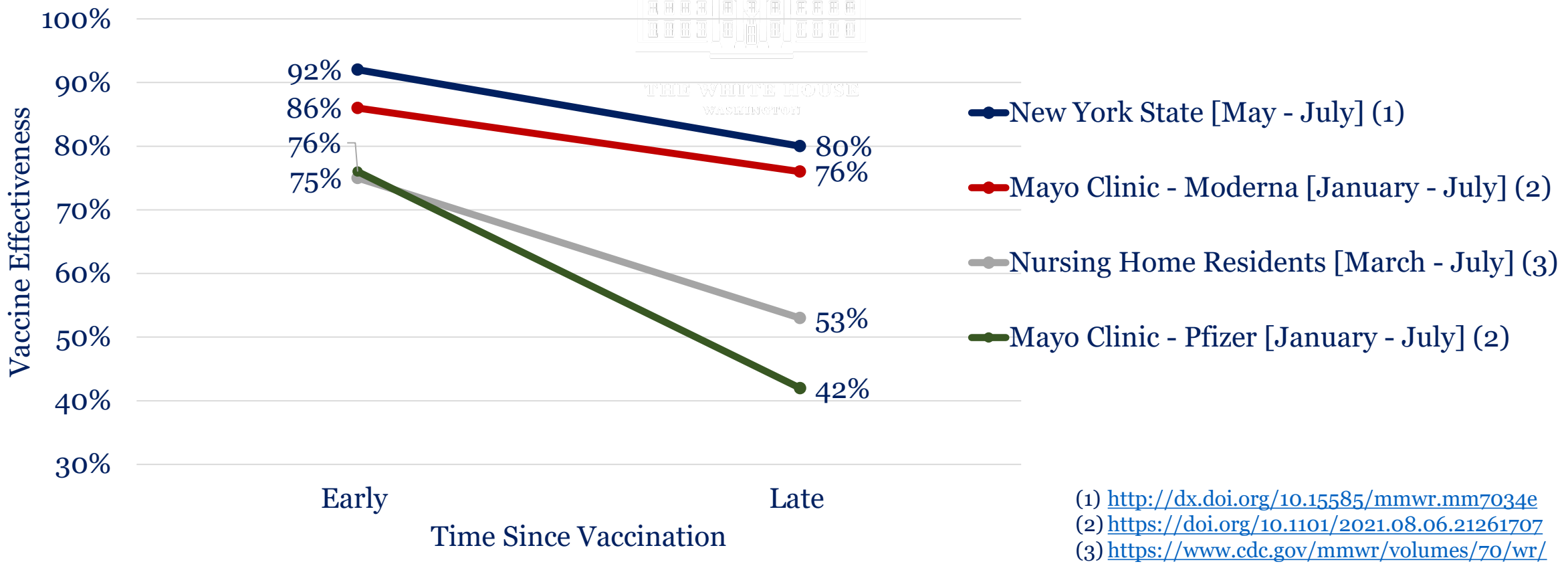
Effectiveness of Pfizer-BioNTech and Moderna Vaccines in Preventing SARS-CoV-2 Infection Among Nursing Home Residents Before and During Widespread Circulation of the SARS-CoV-2 B.1.617.2 (Delta) Variant — National Healthcare Safety Network, March 1–August 1, 2021

Srinivas Nanduri, MD[1,*]; Tamara Pilishvili, PhD[1,*]; Gordana Derado, PhD[1]; Minn Minn Soe, MBBS[1]; Philip Dollard, MPH[1]; Hsiu Wu, MD[1]; Qunna Li, MSPH[1]; Suparna Bagchi, DrPH[1]; Heather Dubendris, MSPH[1,2]; Ruth Link-Gelles, PhD[1]; John A. Jernigan, MD[1]; Daniel Budnitz, MD[1]; Jeneita Bell, MD[1]; Andrea Benin, MD[1]; Nong Shang, PhD[1]; Jonathan R. Edwards, MStat[1*]; Jennifer R. Verani, MD[1,*]; Stephanie J. Schrag, DPhil[1,*]

- Nursing homes: Reported weekly case counts of new laboratory-confirmed SARS-CoV-2 infections among nursing home residents and staff by vaccination status from February 15 through August 1



Vaccine Effectiveness against Infection has Decreased over Time



(1) http://dx.doi.org/10.15585/mmwr.mm7034e
(2) https://doi.org/10.1101/2021.08.06.21261707
(3) https://www.cdc.gov/mmwr/volumes/70/wr/mm7034e3.htm?s_cid=mm7034e3_w

Vaccines Effectiveness against Hospitalizations Remains Relatively High

MMWR Morbidity and Mortality Weekly Report

New COVID-19 Cases and Hospitalizations Among Adults, by Vaccination Status — New York, May 3–July 25, 2021

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- NY State: Age-adjusted VE against new COVID-19 *diagnoses* declined from 92% to 80%
  - Age-adjusted VE against hospitalizations remained stable at 92%-95%
- Mayo Clinic: VE against Delta variant infection decreased for both mRNA vaccines
  - VE against hospitalization remained high

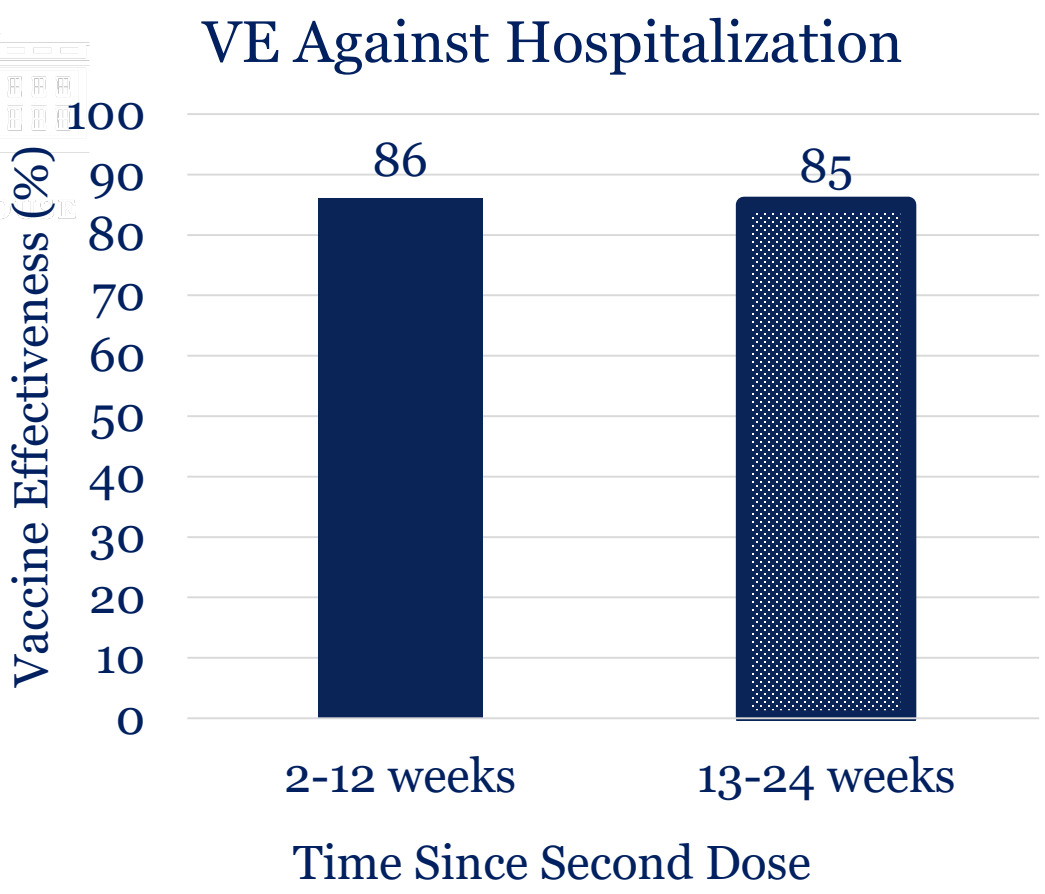
Vaccines Effectiveness against Hospitalizations Remains Relatively High

MMWR Morbidity and Mortality Weekly Report

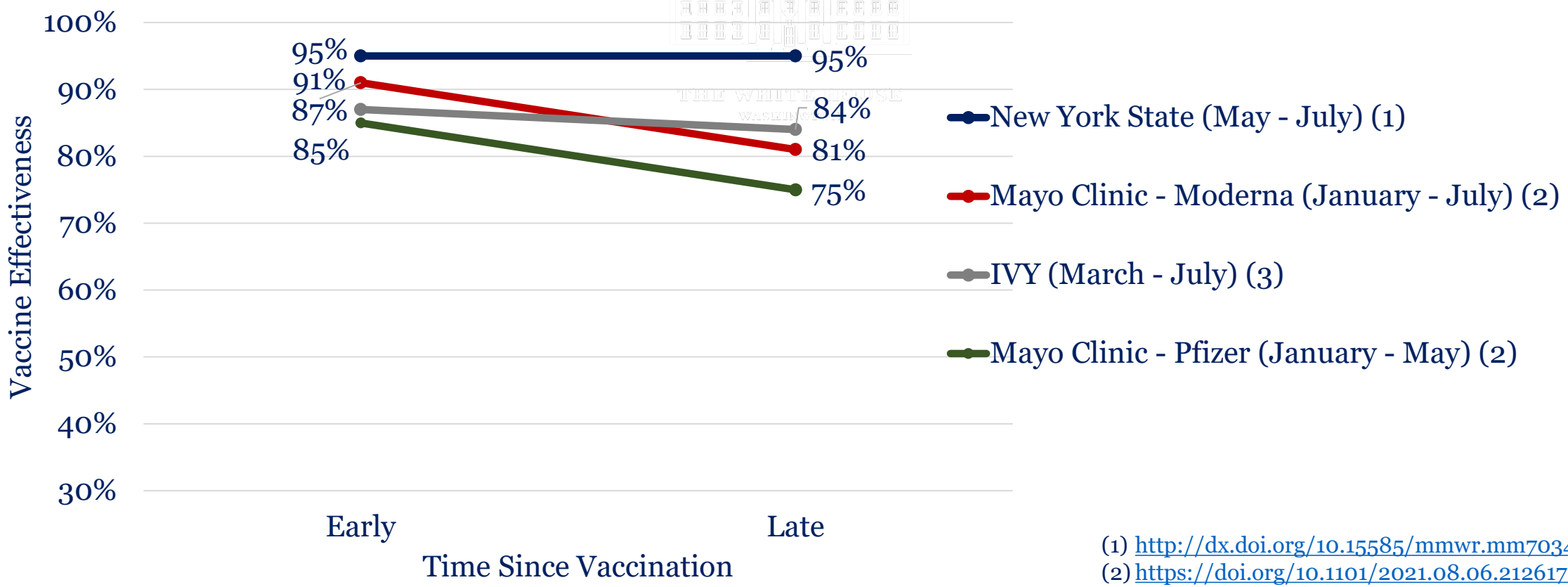
Sustained Effectiveness of Pfizer-BioNTech and Moderna Vaccines Against COVID-19 Associated Hospitalizations Among Adults — United States, March–July 2021

Mark W. Tenforde, MD, PhD[1,*]; Wesley H. Self, MD[2,*]; Eric A. Naioti, MPH[1]; Adit A. Ginde, MD[3]; David J. Douin, MD[3]; Samantha M. Olson, MPH[1]; H. Keipp Talbot, MD[2]; Jonathan D. Casey, MD[2]; Nicholas M. Mohr, MD[4]; Anne Zepeski, PharmD[4]; Manjusha Gaglani, MBBS[5,6]; Tresa McNeal, MD[5]; Shekhar Ghamande, MD[5]; Nathan I. Shapiro, MD[7]; Kevin W. Gibbs, MD[8]; D. Clark Files, MD[8]; David N. Hager, MD, PhD[9]; Arber Shehu, MD[9]; Matthew E. Prekker, MD[10]; Heidi L. Erickson, MD[10]; Michelle N. Gong, MD[11]; Amira Mohamed, MD[11]; Daniel J. Henning, MD[12]; Jay S. Steingrub, MD[13]; Ithan D. Peltan, MD[14]; Samuel M. Brown, MD[14]; Emily T. Martin, PhD[15]; Arnold S. Monto, MD[15]; Akram Khan, MD[16]; Catherine L. Hough, MD[16]; Laurence W. Busse, MD[17]; Caitlin C. ten Lohuis, ACNP-BC[17]; Abhijit Duggal, MD[18]; Jennifer G. Wilson, MD[19]; Alexandra June Gordon, MD[19]; Nida Qadir, MD[20]; Steven Y. Chang, MD, PhD[20]; Christopher Mallow, MD[21]; Carolina Rivas[21]; Hilary M. Babcock, MD[22]; Jennie H. Kwon, DO[22]; Matthew C. Exline, MD[23]; Natasha Halasa, MD[2]; James D. Chappell, MD, PhD[2]; Adam S. Lauring, MD, PhD[24]; Carlos G. Grijalva, MD[2]; Todd W. Rice, MD[2]; Ian D. Jones, MD[2]; William B. Stubblefield, MD[2]; Adrienne Baughman[2]; Kelsey N. Womack, PhD[2]; Christopher J. Lindsell, PhD[2]; Kimberly W. Hart, MA[2]; Yuwei Zhu, MD[2]; Meagan Stephenson, MPH[1]; Stephanie J. Schrag, DPhil[1]; Miwako Kobayashi, MD[1]; Jennifer R. Verani, MD[1]; Manish M. Patel, MD[1]; IVY Network Investigators

- IVY: In an evaluation at 21 hospitals in 18 states, the duration of mRNA VE against COVID-19–associated hospitalizations was assessed among adults aged ≥18 years

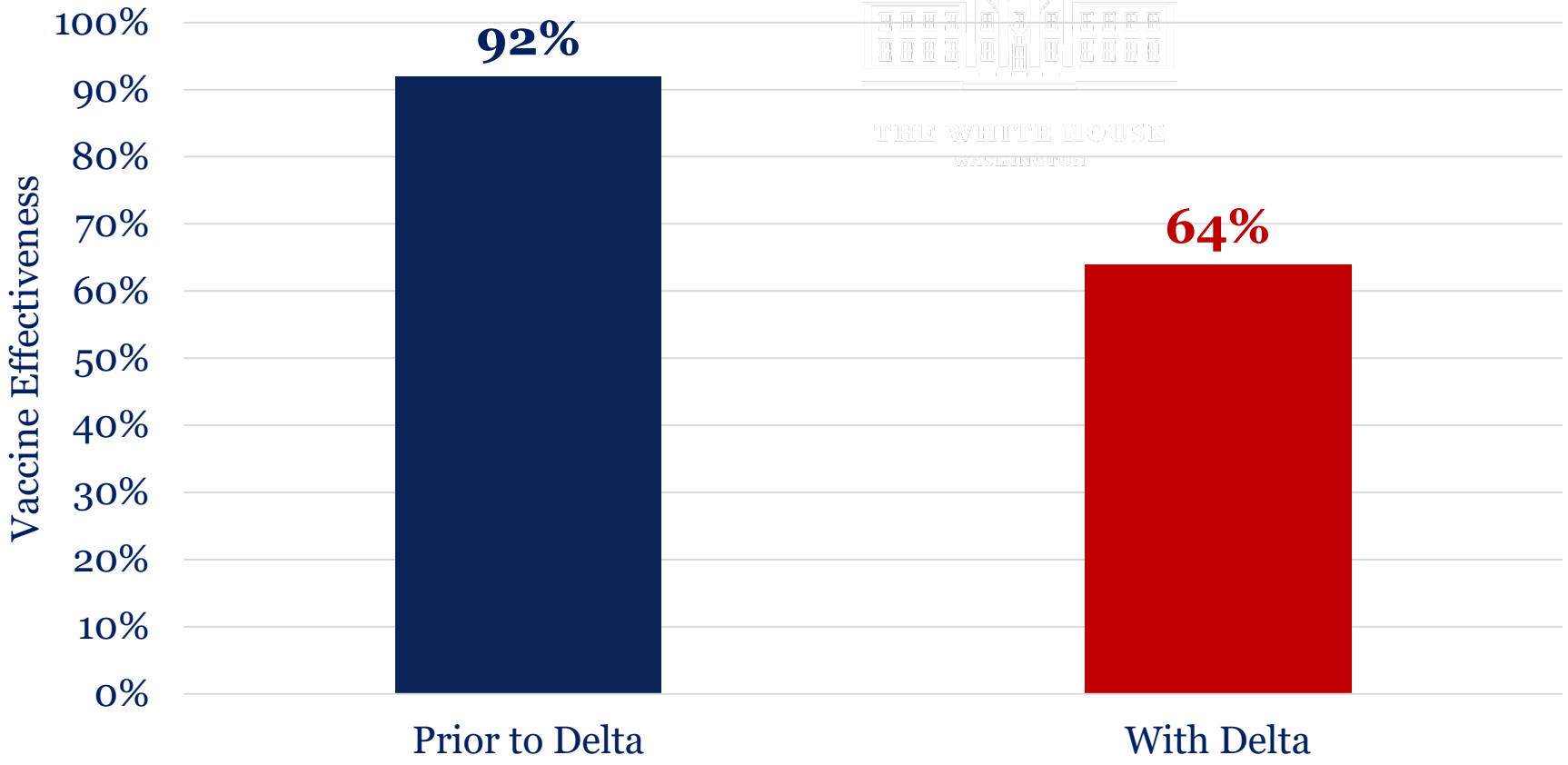


Vaccine Effectiveness against Hospitalizations Remains Relatively High



(1) http://dx.doi.org/10.15585/mmwr.mm7034e
(2) https://doi.org/10.1101/2021.08.06.21261707
(3) http://dx.doi.org/10.15585/mmwr.mm7034e2

Vaccine Effectiveness against Infection has Decreased for the Delta Variant



Unpublished CDC data, last updated August 6, 2021.

Summary

- Vaccine effectiveness against infection (symptomatic and asymptomatic) is decreasing over time
- Vaccine effectiveness against severe disease, hospitalization, and death remains relatively high
- Vaccine effectiveness is decreased for the Delta variant
- Anticipating further waning immunity and the ongoing Delta surge, we are preparing for a booster vaccine

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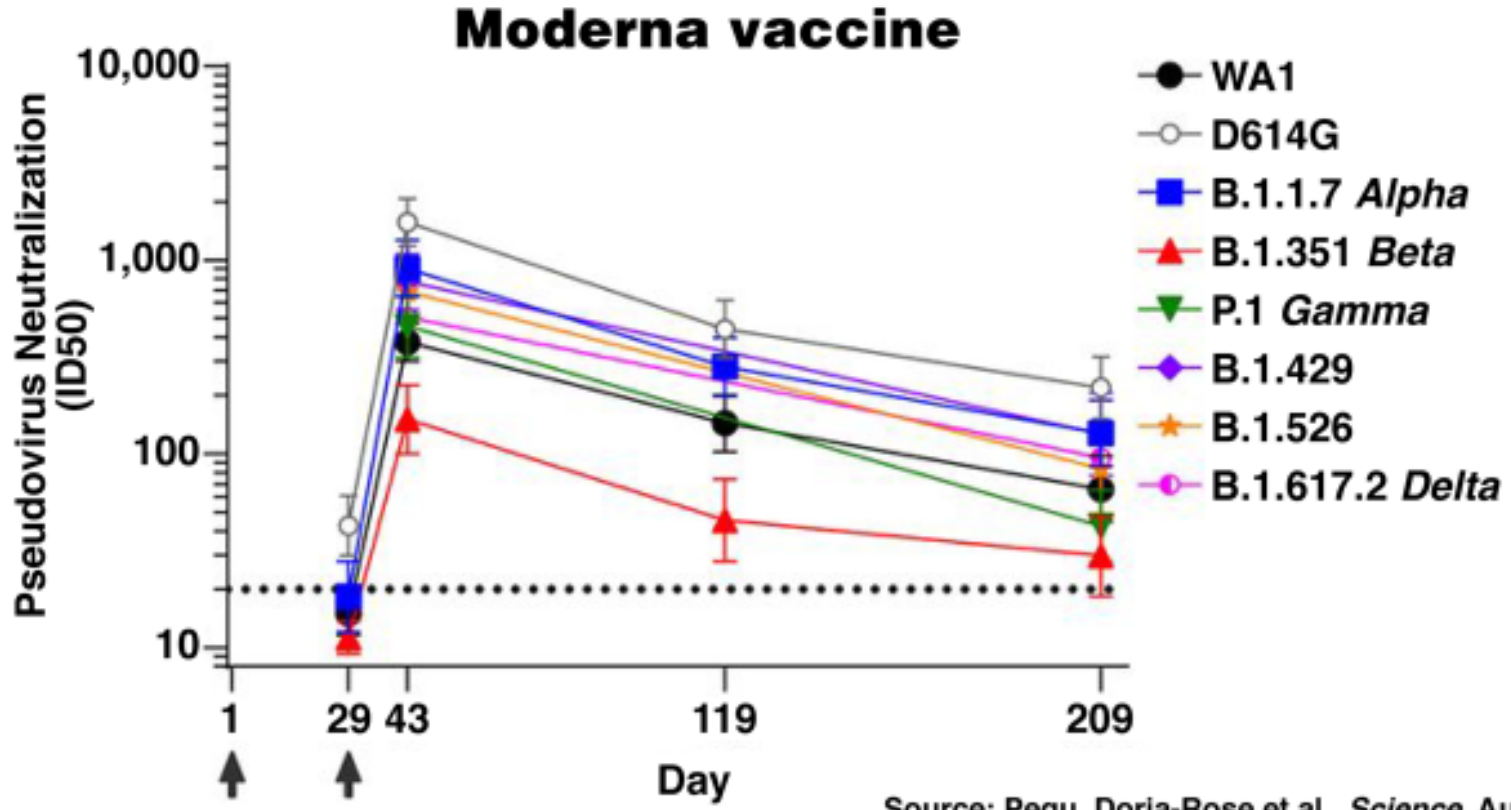
NIH Update

Dr. Anthony Fauci

Immunological Basis Supporting a 3rd (Booster) mRNA Immunization

- Antibody levels decline over time
- Higher levels of antibody are associated with higher levels of vaccine efficacy
- Higher levels of antibody may be required to protect against Delta
- A booster mRNA immunization increases antibody titers by at least 10-fold

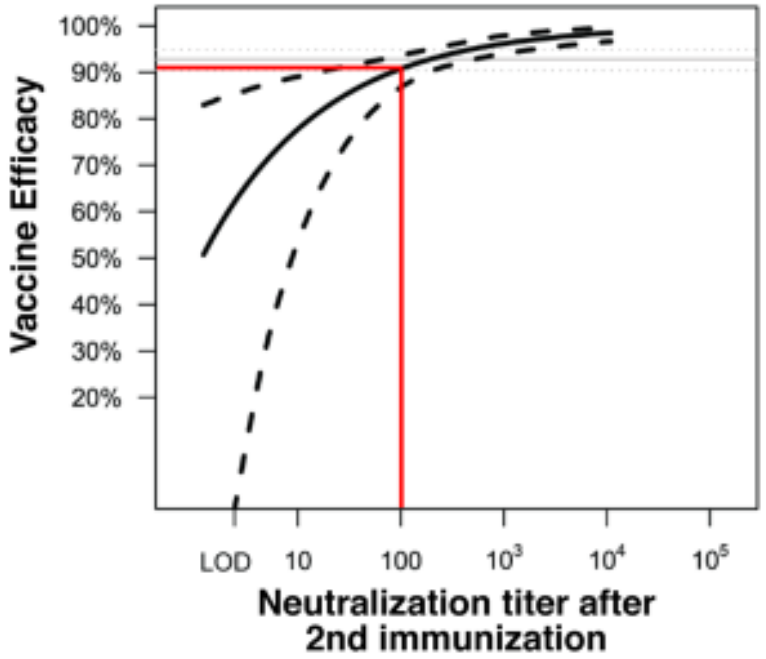
Antibody Levels Decline Over Time Following 2 mRNA Immunizations Regardless of Variant



Source: Pegu, Doria-Rose et al., *Science*, Aug 12, 2021

Higher Levels of Antibody Are Associated With Higher Levels of Vaccine Efficacy

Immune Correlates Analysis of the mRNA-1273 COVID-19 Vaccine Efficacy Trial

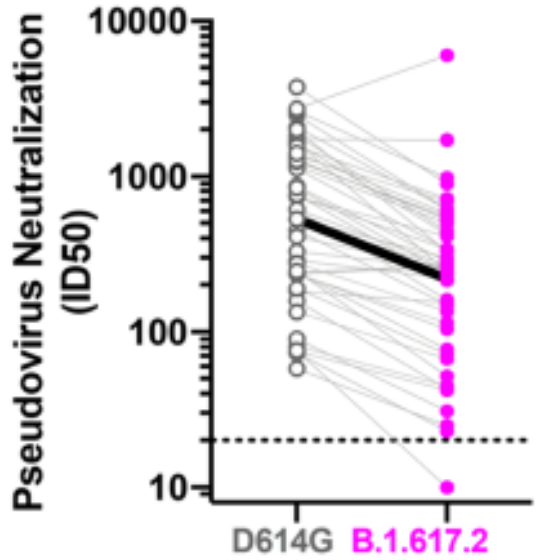


- Model of vaccine efficacy based on Moderna phase 3 study; 4 weeks after 2nd dose
- For serum neutralization titer of 100, vaccine efficacy was 91%

Source: Gilbert at al., Immune Correlates Analysis of the mRNA-1273 COVID-19 Vaccine Efficacy Trial: Pre-print on *medRxiv*

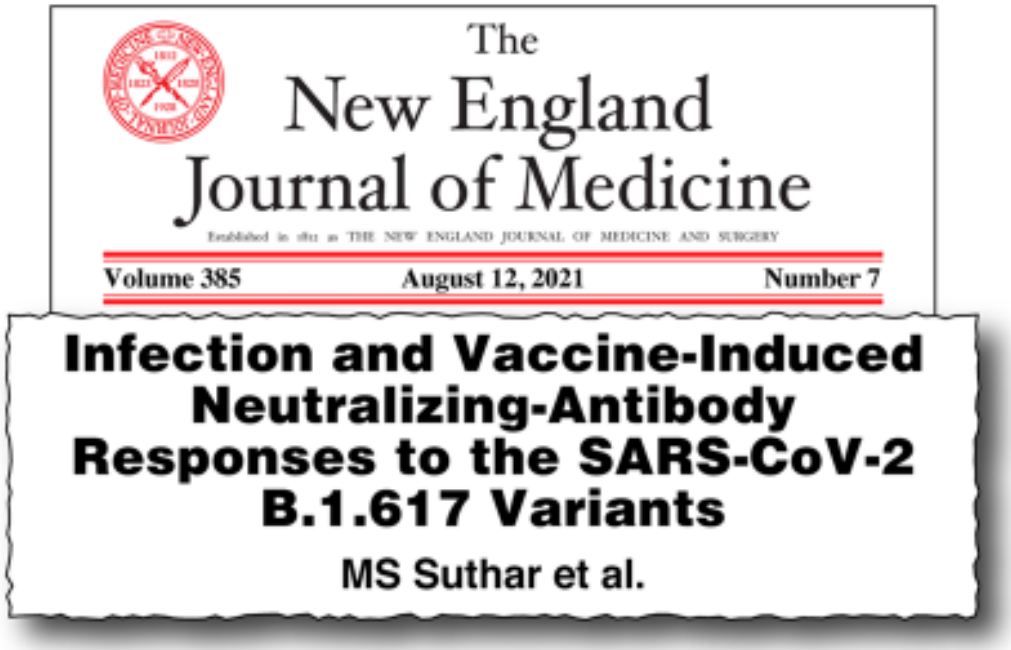
Higher Levels of Antibody May Be Required To Protect Against Delta

Moderna mRNA-1273 vaccine: Serum Neutralization titer after two immunizations



- Average is 2.4 times lower antibody titer for Delta (B.1.617.2)

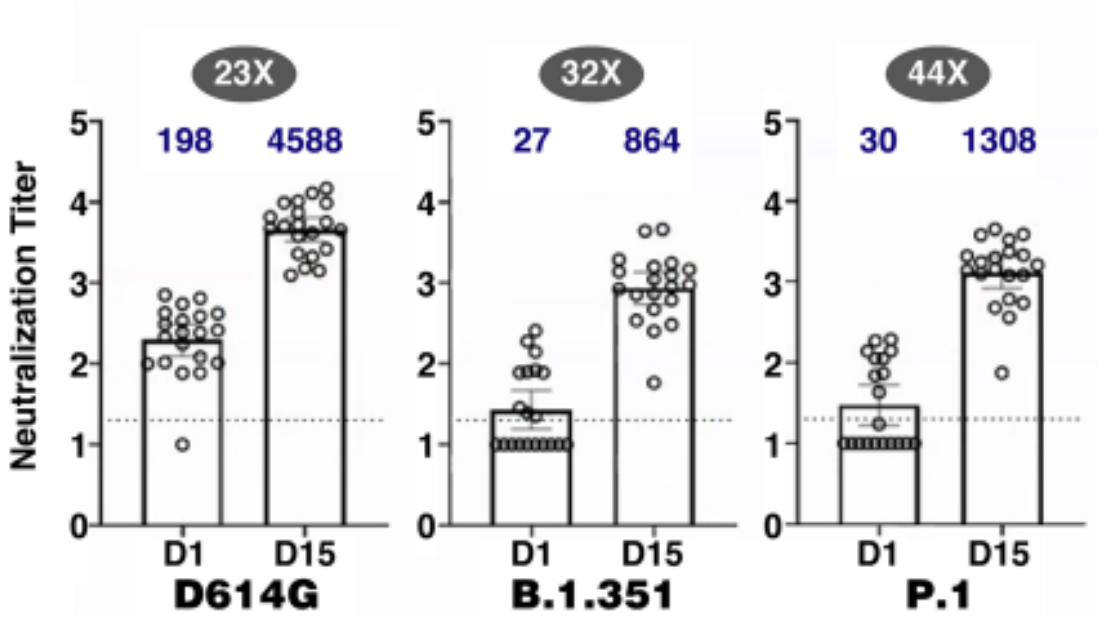
Source: Pegu, Doria-Rose et al., *Science*, Aug 12, 2021



- Similar data for Pfizer mRNA vaccine

A Booster mRNA Immunization Increases Antibody Titers by at Least 10-Fold

Immunogenicity After Boosting with Dose of 50ug of Moderna mRNA vaccine (boost given approx. 6 – 7 months after 2nd shot)



First columns: just before 3rd dose

Second columns: 15 days post-3rd dose boost

Reference: Preliminary Analysis of Safety and Immunogenicity of a SARS-CoV-2 Variant Vaccine Booster Wu et al., *medRxiv* preprint

Summary

- Current immunological data indicating that:
  - Antibody levels decline over time
  - Higher levels of antibody are associated with higher levels of vaccine efficacy
  - Higher levels of antibody may be required to protect against Delta
  - A booster mRNA immunization increases antibody titers by at least 10-fold

support the use of a 3rd (booster) mRNA immunization to increase the level of protection

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Q&A

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