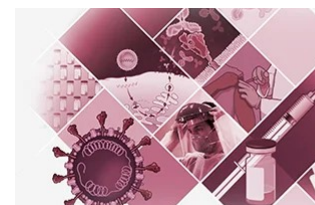




Covid-19 Vaccine Resource Center



A collection of resources on Covid-19 vaccines, including frequently asked questions, continuing medical education, published research, and commentary.

[CORONAVIRUS \(COVID-19\)](#) [VACCINE RESOURCES](#) [VACCINE FAQ](#)

To realize the potential of recently developed Covid-19 vaccines, clinicians must work effectively with patients and communities to administer them widely. The NEJM Vaccine Resource Center helps busy clinicians with practical information and advice.

Frequently Asked Questions

Paul E. Sax, M.D.

Paul Sax, M.D., a Professor of Medicine at Harvard Medical School and an infectious disease specialist, provides concise and engaging answers to clinicians' questions about Covid-19 vaccination and to the questions and concerns patients will raise. [Disclosures](#).



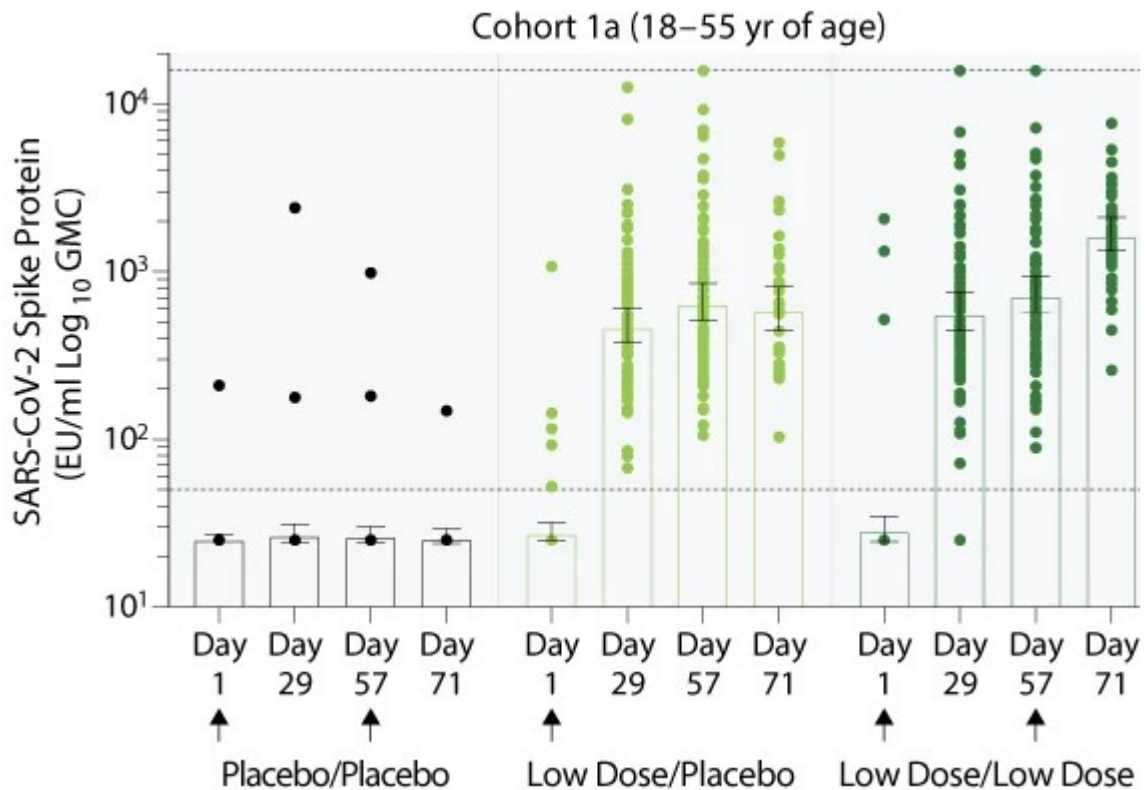
Questions clinicians might have:

- › How does each of the available Covid-19 vaccines work?
- › What do we know about each vaccine's efficacy?
- › How long will the vaccines work? Are booster doses required?
- › Do the vaccines prevent transmission of the virus to others?

› What do we know about each of the vaccines' short-term safety?

[More Frequently Asked Questions »](#)

Recently Published Vaccine Research and Review



ORIGINAL ARTICLE

Adenovirus-Based Covid-19 Vaccine

J. Sadoff and Others

In this interim phase 1–2a trial of an adenovirus-based vaccine (Ad26.COV2.S), participants were divided into two age groups and received one or two injections of either a low-dose or high-dose vaccine or placebo. The vaccine elicited a local injection response in most patients and high titers of neutralizing antibodies in all vaccinated groups. In addition, T-cell responses were noted.

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REVIEW ARTICLE

Allergic Reactions to Covid-19 Vaccine

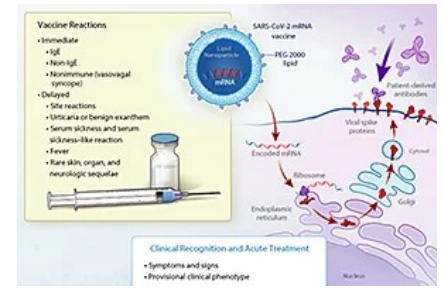
M.C. Castells and E.J. Phillips

The vast majority of people who have received the Covid-19 vaccine to date

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have had self-limited local or low-grade systemic reactions that resolve within 2 or 3 days. A very small number of people have had serious anaphylactic reactions requiring catecholamine infusion and respiratory support. It is important to survey patients in advance of vaccination for allergic responses and to be aware of the early signs of an immediate hypersensitivity reaction.



ORIGINAL ARTICLE

mRNA-1273 Vaccine to Prevent Covid-19

L.R. Baden and Others

Two injections of mRNA-1273, a lipid nanoparticle–encapsulated mRNA-based vaccine produced in collaboration with the NIAID that encodes the SARS-CoV-2 spike protein, conferred protection against Covid-19 illness in 94% of vaccinated patients. Adverse effects of the vaccine were mild, transient local reactions, and the incidence of systemic effects such as fever, headache, and fatigue was low.



Editorial A New Vaccine to Battle Covid-19

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More from NEJM Group

NEJM Catalyst

Mayo Clinic's Multidisciplinary Approach to Covid-19 Vaccine Allocation and Distribution

Dance of the Porcupines: A View into the Rapid Development of Covid-19 Vaccines from Around the World — Part 2

Dance of the Porcupines: A View into the Rapid Development of Covid-19 Vaccines from Around the World — Part 1

NEJM Journal Watch

The Moderna COVID-19 Vaccine: Noteworthy Efficacy to Date

The Pfizer-BioNTech COVID-19 Vaccine: Remarkably Effective

The Oxford/Astra Zeneca COVID-19 Vaccine: Encouraging Interim Results

Physician's First Watch

COVID-19: Officials Urge Expanding Vaccination / Infected Gorillas / Early Mitigation Strategies

CDC: Anaphylaxis with Pfizer-BioNTech COVID-19 Vaccine "Exceedingly Rare"

FDA Sticks to Current COVID-19 Vaccine Schedules Amid Debates



Covid-19 Vaccine Frequently Asked Questions with Paul Sax, M.D.

The New England Journal of Medicine · [Abonnieren](#)

Teilen



In this video, Paul Sax, M.D., a Professor of Medicine at Harvard Medical School and an infectious disease specialist, provides answers to clinicians' questions about Covid-19 vaccinations.

Other Resources

Accreditation Council for Continuing Medical Education

COVID-19 — Learn to Vaccinate: Educator Resources

Vaccine Adverse Event Reporting System

Report an Adverse Event.

Centers for Disease Control and Prevention

COVID-19 Vaccines.

World Health Organization

COVID-19 Vaccines.

NEJM Covid-19 Update Podcast

Listen to conversations with editors Eric Rubin and Lindsey Baden and occasional guests on Covid-19 vaccine development and distribution.

Jan 7, Planning for the Vaccine Rollout, with Thomas Lee

Dec 31, Covid-19 Prevention and Care in 2020

Dec 17, Vaccine Fundamentals

Nov 19, Covid-19 in Europe and New Information on Vaccines, with Charlotte Haug

Nov 12, More from Operation Warp Speed, with Janet Woodcock

Nov 5, The U.S. Response Today

Oct 14, Vaccinology

Sep 17, Operation Warp Speed and Therapeutics

Sep 10, Guidelines for Vaccine Deployment

Aug 27, Operation Warp Speed

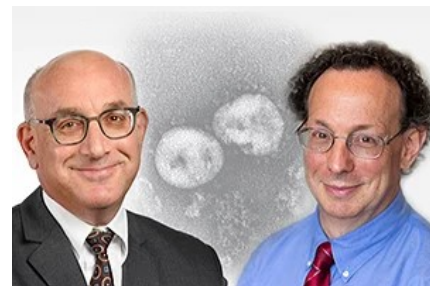
Aug 13, Building a Successful Public Health Response

Jul 30, New Vaccine Results, with Peter Piot

Jul 16, Vaccine Development

May 21, Capitalizing on Immune Responses

Apr 23, Approaches to Vaccines and Antivirals



More Covid-19 Vaccine Research and Review

ORIGINAL ARTICLE DEC 31, 2020

Safety and Efficacy of an RNA-Based SARS-CoV-2 Vaccine

F.P. Polack and Others

N Engl J Med 2020; 383:2603-2615

A vaccine containing an RNA molecule encoding the SARS-CoV-2 spike protein was tested in a trial in which two injections were given 3 weeks apart. After the second injection, Covid-19 developed in 162 patients receiving placebo, with a median follow-up of 2 months, and in 8 patients receiving the vaccine. Side effects were mainly mild-to-moderate injection-site pain and swelling.

Editorial SARS-CoV-2 Vaccination — An Ounce (Actually, Much Less) of Prevention

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ORIGINAL ARTICLE DEC 17, 2020

Phase 1 Trial of an RNA-based Covid-19 Vaccine

E.E. Walsh and Others

N Engl J Med 2020; 383:2439-2450

Two doses 3 weeks apart of a lipid nanoparticle, nucleoside-modified RNA vaccine encoding a trimerized SARS-CoV-2 receptor-binding domain elicited high levels of antigen-binding and virus-neutralizing antibodies in adults 18 to 55 years and 65 to 85 years of age. Reactogenicity was moderate and transient. Large trials are ongoing.



ORIGINAL ARTICLE DEC 17, 2020

mRNA Vaccine against Covid-19 in Older Adults

E.J. Anderson and Others

N Engl J Med 2020; 383:2427-2438

The mRNA-1273 vaccine, which elicited antibodies and T cells specific for the Covid-19 virus in adults 55 years of age or younger, elicited similarly high levels of neutralizing-antibody and CD4 T-cell responses in a small group of older adults, including those 71 years of age or older.

FREE CME **ORIGINAL ARTICLE** DEC 10, 2020

SARS-CoV-2 Recombinant Nanoparticle Vaccine

C. Keech and Others

N Engl J Med 2020; 383:2320-2332

A recombinant SARS-CoV-2 spike protein nanoparticle vaccine delivered in the deltoid muscle on days 0 and 21 was found to be immunogenic at both 5 µg and 25 µg doses. When given with a saponin-based adjuvant, both doses were equally immunogenic, with little or no reactogenicity, and elicited neutralizing antibody titers higher than those in convalescent serum.

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**ORIGINAL ARTICLE** OCT 15, 2020

mRNA-Based Covid-19 Vaccine in Nonhuman Primates

K.S. Corbett and Others

N Engl J Med 2020; 383:1544-1555

Two injections of an mRNA-based vaccine encoding the SARS-CoV-2 spike protein elicited high levels of neutralizing antibody and Th1 CD4 T-cell responses in rhesus macaques. Two days after challenge of vaccinated animals with intranasal and intratracheal virus, viral replication was undetectable in bronchoalveolar-lavage fluid and nasal secretions.

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**ORIGINAL ARTICLE** NOV 12, 2020

Immunogenicity of a Candidate SARS-CoV-2 Vaccine

L.A. Jackson and Others

N Engl J Med 2020; 383:1920-1931

Two inoculations with a new SARS-CoV-2 mRNA-based vaccine that encodes a protein in the coronavirus spike elicited high titers of virus-neutralizing antibody in healthy adult volunteers. Virus-specific T-cell responses were also elicited. Interim findings indicated that a dose of 100 µg per injection maximized immune response and minimized the reactogenicity of the vaccine.

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Editorial The Covid-19 Vaccine-Development Multiverse**CORRESPONDENCE** JAN 07, 2021**Immunogenicity and the mRNA-1273 SARS-CoV-2 Vaccine**

A.T. Widge and Others

N Engl J Med 2021; 384:80-82

Thirty-four adults received two 100- μ g injections of the mRNA-1273 SARS-CoV-2 vaccine, and serum anti-spike protein and neutralizing antibody titers were measured at day 119 — 90 days after the second injection. By three different assays, binding and neutralizing antibody titers declined slightly but remained elevated and higher than titers in convalescent plasma.

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**CORRESPONDENCE** SEP 10, 2020**Covid-19 Antibodies after Mild Infection**

F.J. Ibarondo and Others

N Engl J Med 2020; 383:1085-1087

Among 34 volunteers who had recovered from mild Covid-19 illness, antiviral antibodies to the receptor-binding domain of the viral spike protein declined with a mean half-life of approximately 36 days after recovery. Whether these results predict the duration of viral immunity in persons recovering from more severe cases of Covid-19 or those exposed to vaccines is unknown.

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B.R. Bloom, G.J. Nowak, and W. Orenstein

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Placebo-Controlled Trials of Covid-19 Vaccines

WHO Ad Hoc Expert Group on the Next Steps for Covid-19 Vaccine Evaluation

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M. Slaoui, S.E. Greene, and J. Woodcock

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M. Slaoui and M. Hepburn

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J.L. Schwartz

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J. Avorn and A.S. Kesselheim

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Accelerating Development of SARS-CoV-2 Vaccines

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