



COVID-19 Digest Issue 52

April 23, 2021

CLINICAL PEARL

- **Vaccine-induced immune thrombotic thrombocytopenia:** On April 13, 2021, the U.S. Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC) suggested pausing administration of the COVID-19 Johnson & Johnson (J&J) vaccine to allow investigation of several post-vaccination cases of a new severe clotting and thrombocytopenia syndrome named **vaccine-induced immune thrombotic thrombocytopenia (VITT)**.
 - **According to the American Society of Hematology, VITT is a syndrome characterized by 1) thrombosis, particularly at unusual sites including cerebral sinus venous thrombosis (CSVT)/splanchnic thrombosis; 2) mild to severe thrombocytopenia; and 3) positive PF4-heparin ELISA and platelet activation assays.**
 - The April 13th announcement came on the heels of the initial reports of VITT in individuals receiving the COVID-19 AstraZeneca (AZ) vaccine outside the United States. **Based on current information, the risks of COVID-19 disease and COVID-19-associated thrombosis far outweigh the extremely rare risk of VITT. Additionally, there is no information to date to suggest an increased risk for VITT in patients with blood diseases and/or pre-existing risk factors for thrombosis or autoimmunity.**
 - VITT was originally described in patients vaccinated five to 16 days previously with the COVID-19 AstraZeneca vaccine, which has been used extensively in the United Kingdom, Europe, and Canada, but is not available in the United States. Patients in these reports were primarily younger than 55 years, and more than 80 percent were female. None had received recent heparin, and few had other known risk factors for thrombosis. Many of the patients were critically ill by the time thrombosis and thrombocytopenia were discovered, and up to one-third of the initially reported patients died.
 - More recently, VITT has been reported in at least six patients [receiving the COVID-19 J&J vaccine](#). AZ and J&J vaccines consist of recombinant adenoviral vectors based on a chimpanzee adenovirus or a human adenovirus, respectively, both encoding the SARS-CoV-2 spike protein immunogen. As of April 14, 2021, according to the FDA, while a few individuals receiving the Moderna lipid nanoparticle encapsulated mRNA vaccine have been diagnosed with CSVT, no patients receiving the Moderna or the similar mRNA Pfizer-BioNTech vaccine have been known to develop VITT.
 - **The striking clinical similarities of VITT to heparin-induced thrombocytopenia (HIT) and the uniformly positive PF4-heparin ELISAs in these index cases led investigators to identify circulating PF4-reactive antibodies that are able to directly activate platelets in the absence of heparin.**
 - It is common for vaccinated individuals to experience mild-to-moderate constitutional symptoms following vaccination. These can include fever, fatigue, headache, or muscle aches, are usually limited to the 24 to 36 hours following vaccination and are not suggestive of VITT. **However, patients with severe, recurrent, or persistent symptoms, particularly intense headache, back pain, abdominal pain, nausea and vomiting, vision changes, shortness of breath, petechiae or easy bruising and/or leg pain and swelling, either persisting or beginning four to 20 days following vaccination, should be evaluated urgently by a medical provider and consideration should be given to underlying VITT.** While current information links VITT to AZ and J&J vaccines, patients with suggestive timing and symptoms following any COVID-19 vaccine should be evaluated for VITT.
 - The **initial VITT work-up** should include the following:
 1. **CBC with platelet count and peripheral smear** (the mean platelet count in published reports was 20,000 with a range of 9,000-107,000)
 2. **Imaging for thrombosis** based on symptoms, focused on detection of cerebral sinus venous thrombosis (CSVT) with **contrast** CT or MRI venogram, splanchnic thrombosis, and/or pulmonary emboli





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3. **D-dimer** (the majority of VITT patients have markedly elevated values)
4. **Fibrinogen** (some VITT patients have low values)
5. **PF4/heparin ELISA**: almost all cases reported had positive assays, with optical density > 2.0 -3.0 in the majority. Non-ELISA HIT assays have not been validated as sensitive or specific for VITT and should not be used.
6. **Blood drawn for a confirmatory PF4 platelet activation assay** (serotonin release assay, P-selectin expression assay, or Heparin-Induced Platelet Aggregation/HIPA assay). These assays can be obtained if locally available and if the PF4 ELISA is low positive or if there is uncertainty regarding the diagnosis.
7. Blood should be drawn *prior* to any therapeutic interventions such as IVIG, given the potential interference with both the ELISA and platelet activation assays.
8. A hematology consult should be considered early on.
 - **Patients with worrisome symptoms and/or positive imaging in addition to low platelet counts and high D-dimers should be considered to have VITT and should be started on treatment while awaiting ELISA results.**
 - Patients who present with thrombosis and a normal platelet count post-vaccination might be in an early stage of VITT and should be carefully monitored for the development of thrombocytopenia/VITT.
 - VITT is a newly described syndrome, and all treatment recommendations are based on extrapolations from similarities to HIT and to non-heparin-dependent autoimmune thrombotic thrombocytopenias, analysis of the clinical features in reported cases, and predictions based on laboratory investigations to date of possible pathophysiology. Several national and international societies ([Guidance Statement from the GTH](#); [Guidance produced by the Expert Haematology Panel \[EHP\] focused on Vaccine induced Thrombosis and Thrombocytopenia \[VITT\]](#)) have published detailed position papers on VITT that include expert consensus recommendations and algorithms, with planned frequent updates.
 - In patients presenting with thrombocytopenia, documented or suspected thrombosis, and a positive or pending ELISA 4-20 days post-vaccination, the **recommended treatment is similar to that of severe HIT** and includes:
 1. **IVIG** 1 gram/kg daily X 2 days
 2. **Non-heparin anti-coagulation**, chosen based on the clinical status and organ function of the patient:
 - a. Parenteral direct thrombin inhibitors (argatroban or bivalirudin provided the baseline aPTT is normal)
 - b. Direct oral anticoagulants without lead-in heparin phase
 - c. Fondaparinux, or
 - d. Danaparoid
 3. Low fibrinogen or bleeding are associated with VITT, and should not absolutely preclude anticoagulation, particularly if platelets are >20,000/ μ L or rising following IVIG initiation.
 4. Based on similarities to HIT, **platelet transfusions should be avoided**. However, risk/benefit assessment in individual patients with serious bleeding and/or need for surgical intervention may favor platelet transfusion, following initiation of IVIG, non-heparin anti-coagulation, and fibrinogen replacement (if deficient).
 - At this time, the duration of risk of thrombosis in patients with VITT is not known. Pending more data, those with documented thrombosis should receive a **minimum of three months anticoagulation**, as for any provoked venous thrombo-embolism (VTE).
 - **Patients with isolated thrombocytopenia and continued absence of thrombosis may have post-vaccine immune thrombocytopenic purpura (ITP) and not VITT** as confirmed by a negative PF4 ELISA. Almost 100 cases of new-onset acute ITP, one case being fatal, have been diagnosed in the same timeframe following vaccination as VITT (median, 8 days). These occurrences





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have been noted following AZ and JJ as well as Moderna and Pfizer vaccines. **The platelet count at presentation is often <10,000/ μ L, somewhat lower than in VITT (median, 20,000/ μ L), and thromboses have not been associated with these cases,** although most cases likely did not have a PF4 ELISA checked. **Many presented with bleeding.** Estimates to date suggest that post-COVID vaccine ITP is rare (1 in 100,000 to 1 in 1,000,000) and may be related to vaccination or represent a coincidental event. **Most patients respond to the combination of IVIG, and/or steroids, with platelet transfusions if bleeding. Avoidance of rituximab** is important because of slow onset of action (weeks), negation of recent vaccine-induced immunity, and inability to vaccinate again for more than six months. For more details regarding treatment see [ITP FAQ](#).

- It is important to rule out VITT with a negative ELISA assay in patients presenting with thrombocytopenia four to 20 days post-vaccination, even in the absence of symptoms suggestive of thrombosis. While awaiting PF4 ELISA results, IVIG could be administered to patients with profound thrombocytopenia and bleeding, given the indication for this medication in the treatment of both ITP and VITT.

PUBLIC HEALTH UPDATES

- [FDA Revokes Emergency Use Authorization for Monoclonal Antibody Bamlanivimab](#)
- [FDA Continues Important Steps to Ensure Quality, Safety and Effectiveness of Authorized COVID-19 Vaccines](#)
- HHS [Message from HHS-OIG Leadership on the COVID-19 Vaccination Program and Provider Compliance](#)
- NIH
 - [Large clinical trial to study repurposed drugs to treat COVID-19 symptoms](#)
 - [Large NIH clinical trial will test polyclonal antibody therapeutic for COVID-19](#)
 - [NIH closes enrollment in trial comparing COVID-19 treatment regimens](#)
 - [NIH-funded COVID-19 testing initiative aims to safely return children to in-person school](#)

GUIDANCE/GUIDELINE

- American Society of Hematology [Clinical Practice Guidelines on Venous Thromboembolism](#)

RESOURCES

- FDA [Screening for COVID-19: Deciding Which Test to Use When Establishing Testing Programs](#)
- CDC
 - [Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Authorized in the United States](#)
 - [COVID-19 Vaccine FAQs for Healthcare Professionals](#)
 - [Recommendation to Pause Use of Johnson & Johnson's Janssen COVID-19 Vaccine](#)
 - [Public Health Genomics and Precision Health Knowledge Base \(v7.3\)](#)
 - [Pharmacogenomics](#)
 - [Health Equity](#)
 - April 2021 Zoonoses & One Health Updates (ZOHU) Call: [Investigation of Severe Outcomes of SARS-CoV-2 Infection in Companion Animals](#)
- American Society of Hematology [Vaccine-induced Immune Thrombotic Thrombocytopenia: Frequently Asked Questions](#)
- Brighton Collaboration [Proposed Brighton Collaboration process for developing a standard case definition for study of new clinical syndrome X, as applied to Thrombosis with Thrombocytopenia Syndrome \(TTS\)](#)





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- U.S. Senate Committee on Homeland Security and Government Affairs [Preparedness for COVID-19: The Initial Pandemic Response and Lessons Learned](#)
- The House Select Subcommittee on the Coronavirus Crisis [Hybrid Hearing On “Reaching The Light At The End Of The Tunnel: A Science-Driven Approach To Swiftly And Safely Ending The Pandemic”](#)
- American Medical Association Webinar [COVID-19: What Physicians Need to Know](#)
- Center for Infectious Disease Research and Policy
 - [Osterholm Update: COVID-19](#)
 - [COVID-19 Podcasts and Webinar](#)
- American Journal of Public Health [COVID-19](#)
- New York Times [Coronavirus Drug and Treatment Tracker](#)
- AXIOS [Coronavirus Variant Tracker](#)

ACADEMIC/RESEARCH PAPERS

- *New England Journal of Medicine*
 - [Thrombotic Thrombocytopenia after ChAdOx1 nCov-19 Vaccination](#)
 - [Thrombosis and Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination](#)
 - [Thrombotic Thrombocytopenia after Ad26.COVS.S Vaccination](#)
 - [Thrombotic Thrombocytopenia after Ad26.COVS.S Vaccination — Response from the Manufacturer](#)
 - [Pathologic Antibodies to Platelet Factor 4 after ChAdOx1 nCoV-19 Vaccination](#)
 - [SARS-CoV-2 Vaccine-Induced Immune Thrombotic Thrombocytopenia](#)
 - [Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons](#)
 - [SARS-CoV-2 Antibody Response in Persons with Past Natural Infection](#)
 - [Vaccine Breakthrough Infections with SARS-CoV-2 Variants](#)
- *Preprint*
 - [Cerebral venous thrombosis: a retrospective cohort study of 513,284 confirmed COVID-19 cases and a comparison with 489,871 people receiving a COVID-19 mRNA vaccine](#)
- *Cell Reports Medicine*
 - [BNT162b2 Vaccination Effectively Prevents the Rapid Rise of SARS-CoV-2 Variant B.1.1.7 in high risk populations in Israel](#)
- *medRxiv*
 - [Evidence for increased breakthrough rates of SARS-CoV-2 variants of concern in BNT162b2 mRNA vaccinated individuals](#)
 - [High coverage COVID-19 mRNA vaccination rapidly controls SARS-CoV-2 transmission in Long-Term Care Facilities](#)
 - [SARS-CoV-2 infection risk among unvaccinated is negatively associated with community-level vaccination rates](#)
- *JAMA*
 - [Spike Antibody Levels of Nursing Home Residents With or Without Prior COVID-19 3 Weeks After a Single BNT162b2 Vaccine Dose](#)
 - [Postoperative In-Hospital Morbidity and Mortality of Patients With COVID-19 Infection Compared With Patients Without COVID-19 Infection](#)
 - [Mortality Among US Patients Hospitalized With SARS-CoV-2 Infection in 2020](#)
 - [Fitted Filtration Efficiency of Double Masking During the COVID-19 Pandemic](#)
- *Blood*





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- [Low Neutralizing Antibody Responses Against SARS-CoV-2 in Elderly Myeloma Patients After the First BNT162b2 Vaccine Dose](#)
- [Efficacy of the BNT162b2 mRNA COVID-19 Vaccine in Patients with Chronic Lymphocytic Leukemia](#)
- *Science*
 - [Genomics and epidemiology of the P.1 SARS-CoV-2 lineage in Manaus, Brazil](#)
 - [Shared B cell memory to coronaviruses and other pathogens varies in human age groups and tissues](#)
 - [Vaccines that can protect against many coronaviruses could prevent another pandemic](#)
- *Lancet*
 - [SARS-CoV-2 seropositivity and subsequent infection risk in healthy young adults: a prospective cohort study](#)
 - [Genomic characteristics and clinical effect of the emergent SARS-CoV-2 B.1.1.7 lineage in London, UK: a whole-genome sequencing and hospital-based cohort study](#)
 - [Changes in symptomatology, reinfection, and transmissibility associated with the SARS-CoV-2 variant B.1.1.7: an ecological study](#)
 - [Lack of detail in population-level data impedes analysis of SARS-CoV-2 variants of concern and clinical outcomes](#)
 - [Identifying clinical and biochemical phenotypes in acute respiratory distress syndrome secondary to coronavirus disease-2019](#)
 - [Inhaled budesonide in the treatment of early COVID-19 \(STOIC\): a phase 2, open-label, randomised controlled trial](#)
 - [SARS-CoV-2 reinfection in a closed setting: lessons for the community](#)
 - [Ten scientific reasons in support of airborne transmission of SARS-CoV-2](#)
 - [Extracorporeal membrane oxygenation network organisation and clinical outcomes during the COVID-19 pandemic in Greater Paris, France: a multicentre cohort study](#)
- *Pediatrics*
 - [Pediatric Vaccination During the COVID-19 Pandemic](#)
- *Annals of Internal Medicine*
 - [COVID-19 Inequities Across Multiple Racial and Ethnic Groups: Results From an Integrated Health Care Organization](#)
 - [SARS-CoV-2 Reinfection in a Liver Transplant Recipient](#)
- *PNAS*
 - [Killed whole-genome reduced-bacteria surface-expressed coronavirus fusion peptide vaccines protect against disease in a porcine model](#)
- *Journal of Infectious Diseases*
 - [Seroprevalence of SARS-CoV-2 following the largest initial epidemic wave in the United States: Findings from New York City, May 13-July 21, 2020](#)
- *Clinical Infectious Diseases*
 - [SARS-CoV-2 transmission in a Georgia school district — United States, December 2020–January 2021](#)
- *American Journal of Public Health*
 - [Shelter Characteristics, Infection Prevention Practices, and Universal Testing for SARS-CoV-2 at Homeless Shelters in 7 US Urban Areas](#)
 - [Essential Strategies to Curb COVID-19 Transmission in Prisons and Jails](#)
 - [Change Over Time in Public Support for Social Distancing, Mask Wearing, and Contact Tracing to Combat the COVID-19 Pandemic Among US Adults, April to November 2020](#)
 - [Public Policy Impact of the COVID-19 Pandemic on Blood Supply in the United States](#)





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- [Critical Care Requirements Under Uncontrolled Transmission of SARS-CoV-2](#)
- [COVID-19 Contact Tracing Conundrums: Insights From the Front Lines](#)
- [Contact Tracing Could Exacerbate COVID-19 Health Disparities: The Role of Economic Precarity and Stigma](#)
- [Racism and Xenophobia in a Pandemic: Interactions of Online and Offline Worlds](#)
- [Sinophobic Stigma Going Viral: Addressing the Social Impact of COVID-19 in a Globalized World](#)
- *Emerging Infectious Diseases*
 - [Severe Acute Respiratory Syndrome Coronavirus 2 P.2 Lineage Associated with Reinfection Case, Brazil, June–October 2020](#)
 - [Respiratory Viral Shedding in Healthcare Workers Reinfected with SARS-CoV-2, Brazil, 2020](#)
- *Food Policy*
 - [COVID-19 morbidity and mortality in U.S. meatpacking counties](#)
- *Journal of Public Health Research*
 - [Computed tomography findings of COVID-19 pneumonia in Intensive Care Unit-patients](#)
- *Cleveland Clinic Journal of Medicine*
 - [Is it safe to start steroids at home for a COPD exacerbation after virtual assessment in the COVID-19 era?](#)
- *Journal of the American College of Cardiology*
 - [Initial Findings From the North American COVID-19 Myocardial Infarction Registry](#)
- *Circulation*
 - [SARS-CoV-2 Cardiac Involvement in Young Competitive Athletes](#)
- *Brain*
 - [COVID-19 neuropathology at Columbia University Irving Medical Center/New York Presbyterian Hospital](#)
- *Rheumatology*
 - [Herpes zoster following BNT162b2 mRNA Covid-19 vaccination in patients with autoimmune inflammatory rheumatic diseases: a case series](#)
- *Rheumatology International*
 - [Clinical characteristics and outcome of COVID-19 in patients with rheumatic diseases](#)
- *Med*
 - [Mucosal Associated Invariant T \(MAIT\) Cell Responses Differ by Sex in COVID-19](#)
- *Diabetes Care*
 - [Diabetes and Overweight/Obesity Are Independent, Nonadditive Risk Factors for In-Hospital Severity of COVID-19: An International, Multicenter Retrospective Meta-analysis](#)
- *BMJ*
 - [Suicide attempt and intentional self-harm during the earlier phase of the COVID-19 pandemic in Washtenaw County, Michigan](#)
 - [Modest effects of dietary supplements during the COVID-19 pandemic: insights from 445 850 users of the COVID-19 Symptom Study app](#)
 - [Covid-19 has redefined airborne transmission](#)
 - [Reconsider this summer's Olympic and Paralympic games](#)
- *British Journal of Dermatology*
 - [Ultraviolet A Radiation and COVID-19 Deaths in the USA with replication studies in England and Italy](#)
- *PLOS One*





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- [Discrimination of SARS-CoV-2 infected patient samples by detection dogs: A proof of concept study](#)
- *Children's Hospital of Philadelphia Policy Lab*
 - [COVID-19 Outlook: Cautiously Optimistic a Turning Point is Near](#)
- *Monmouth University Poll*
 - [NATIONAL: ONE IN FIVE STILL SHUN VACCINE](#)
- *U.S. Government Accountability Office*
 - [COVID-19:HHS Should Clarify Agency Roles for Emergency Return of U.S. Citizens during a Pandemic](#)
 - [Global Health Security:USAID and CDC Funding, Activities, and Assessments of Countries' Capacities to Address Infectious Disease Threats before COVID-19 Onset](#)

MMWR

- [Postvaccination SARS-CoV-2 Infections Among Skilled Nursing Facility Residents and Staff Members — Chicago, Illinois, December 2020–March 2021](#)
- [COVID-19 Outbreak Associated with a SARS-CoV-2 R.1 Lineage Variant in a Skilled Nursing Facility After Vaccination Program — Kentucky, March 2021](#)
- [COVID-19 Outbreaks in Correctional Facilities with Work-Release Programs — Idaho, July–November 2020](#)
- [Airport Traveler Testing Program for SARS-CoV-2 — Alaska, June–November 2020](#)

HOT OFF THE (LAY) PRESS

- *The White House Statements and Releases*
 - [Biden Administration Announces \\$1.7 Billion Investment to Fight COVID-19 Variants](#)
 - [Biden Administration Invests \\$4 Billion in American Rescue Plan Funding to Combat COVID-19 in Indian Country](#)
- *New York Times*
 - [Adults in all U.S. states are now eligible for vaccination, hitting Biden's target. Half have had at least one dose](#)
 - [Vaccine eligibility is now wide in the U.S., but one-fifth of older people still need a shot.](#)
 - [Fauci says he expects a decision on whether the U.S. can resume using Johnson & Johnson's vaccine on Friday](#)
 - [States Struggle With Vaccine Pause as Federal Officials Reassure Public](#)
 - [Nation Faces 'Hand-to-Hand Combat' to Get Reluctant Americans Vaccinated](#)
 - [The F.D.A. found failures to disinfect equipment and prevent contamination after inspecting a Baltimore plant where J.&J. doses were ruined.](#)
 - [Booster shots and re-vaccinations could be needed. Drug companies are planning for it](#)
 - [Can the Covid Vaccine Protect Me Against Virus Variants?](#)
 - [You're Vaccinated. Your Kids Are Not. What Now?](#)
 - [How the Tiny Kingdom of Bhutan Out-Vaccinated Most of the World](#)
 - [The global death toll from Covid-19 passes 3 million](#)
 - [India's Second Covid Wave Is Completely Out of Control](#)
 - [Antibody rates among Black and Hispanic New Yorkers are double those of others, new estimates show.](#)
 - [An unvaccinated worker set off an outbreak at a U.S. nursing home where most residents were immunized.](#)
 - [Restaurants Fought for Covid Survival, With Some Tech Helpers](#)





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- [Will You Need a Vaccine Passport in California?](#)
- [How to Use Tech to Prepare for Travel in a Pandemic](#)
- [The Flu Vanished During Covid. What Will Its Return Look Like?](#)
- [Is It Time to End Outdoor Masking?](#)
- *National Geographic*
 - [Does everyone need to wear a mask outside? Experts weigh in.](#)
- *Slate*
 - [It's About Time for Us to Stop Wearing Masks Outside](#)
- *The Irish Times*
 - [Outdoor transmission accounts for 0.1% of State's Covid-19 cases](#)
- *CBS News*
 - [Biden administration working to ensure U.S. will have booster COVID-19 shots if they become necessary](#)
- *CNBC*
 - [Pfizer CEO says third Covid vaccine dose likely needed within 12 months](#)
 - [Moderna hopes to have Covid booster shot for its vaccine ready by the fall, CEO says](#)
- *The Wall Street Journal*
 - [Pfizer Identifies Fake Covid-19 Shots Abroad as Criminals Exploit Vaccine Demand](#)
 - [J&J Privately Asked Rival Covid-19 Vaccine Makers to Probe Clotting Risks](#)
- *Ipsos Poll*
 - [Vast majority of Americans aware of, and support, Johnson & Johnson COVID-19 vaccine pause](#)
- *CNN*
 - [These blood clot experts want you to get a Covid-19 vaccine. Here's why.](#)
 - [Johnson & Johnson said blood clots have been reported with all Covid-19 vaccines. The author of the study they cited says they're wrong.](#)
 - [The US is vaccinating millions of Americans daily. But here's why Covid-19 cases and hospitalizations are up](#)
 - [So far, 5,800 fully vaccinated people have caught Covid anyway in US, CDC says](#)
 - [One dose of Covid-19 vaccine thrown out for every 850 administered, CDC data shows](#)
- *Science News*
 - [Hard choices emerge as link between AstraZeneca vaccine and rare clotting disorder becomes clearer](#)
- *Fierce Pharma*
 - [With demand uncertain and its U.S. manufacturing in limbo, AstraZeneca still aims to seek FDA nod for COVID-19 vaccine](#)
- *AP News*
 - [EU agency links J&J shot to rare clots, says odds favor use](#)
 - [WHO: Europe has surpassed 1 million COVID-19 deaths](#)
 - [Wealthy Latin Americans flock to US in search of vaccines](#)
 - [Guantanamo prisoners now getting COVID-19 vaccine](#)
 - [Amid hesitancy, Louisiana gets creative in vaccine outreach](#)
 - [Coronavirus hug image named World Press Photo of the Year](#)
- *NBC News*
 - [Trump administration awarded a firm \\$1.3 billion to make Covid vaccine syringes. Where are the syringes?](#)
- *NPR*
 - [For Some Americans, Getting A Vaccine Is As Easy As Showing Up To Work](#)





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- [Unrecognized Tribes Struggle Without Federal Aid During Pandemic](#)
- [Post Vaccine Happy Dance: Not Just Showing Off](#)
- *Federal Trade Commission Press Releases*
 - [In First Action Under COVID-19 Consumer Protection Act, FTC Seeks Monetary Penalties for Deceptive Marketing of Purported Coronavirus Treatments](#)
- *The Washington Post*
 - [‘Ripe for fraud’: Coronavirus vaccination cards support burgeoning scams](#)
 - [All about your coronavirus vaccine card \(and what to do if you lose it\)](#)
 - [U.S. sees significant drop in vaccinations over past week](#)
 - [Underserved communities bear brunt of paused Johnson & Johnson rollout](#)
 - [Federal turf wars over coronavirus rescues created ‘health and safety issues’ watchdog concludes](#)
 - [‘I’m still a zero’: Vaccine-resistant Republicans warn that their skepticism is worsening](#)
 - [Spring wave of coronavirus crashes across 38 states as hospitalizations increase](#)
 - [With France on the table, Americans see a chance for summer vacations in Europe](#)
 - [State Department to designate most countries with ‘Do Not Travel’ advisory](#)
- *Business Insider*
 - [Delta, American, United, and other major airlines signal rejection of new CDC guidance saying they should block middle seats](#)
- *Good News Network*
 - [Japanese Doctors Perform World’s First Living Donor Lung Transplant on COVID-19 Patient](#)
- *Doctors Without Borders*
 - [Biden Administration must take bold action to ensure global COVID-19 vaccine access](#)
 - [Brazil: Government’s failed COVID-19 response drives humanitarian catastrophe](#)
- *Reuters*
 - [J&J to cooperate in study of rare clots linked to COVID-19 vaccine, German scientist says](#)
 - [J&J COVID-19 vaccine manufacturing halted at U.S. plant that had contamination issue](#)
 - [Moderna says protection from its COVID-19 vaccine still strong six months on](#)
 - [U.S. parents begin to ask: Should my child get a COVID-19 shot?](#)
 - [Israel logs Indian COVID-19 variant, sees some vaccine efficacy against it](#)
 - [Brazil asks women to delay pregnancy over new coronavirus variant fears](#)
 - [Roche looking for new place to test COVID-19 pill after cases plummet in UK](#)
 - [Non-stop cremations cast doubt on India's counting of COVID dead](#)
 - [Indian COVID-19 patients die as ventilators run out of oxygen; infections surge](#)
- *Medpage Today*
 - [Op-Ed: Can Statisticians Save the J&J Vaccine?](#)
- *PBS*
 - [The shock and reality of catching COVID after being vaccinated](#)
- *STAT News*
 - [‘No one was listening’: Long Covid patients struggle to get care for their symptoms](#)
- *The New Yorker*
 - [The Mystery of Breakthrough COVID-19 Infections](#)
 - [What Will It Take to Pandemic-Proof America?](#)
 - [A Doctor’s Dark Year](#)
- *Kaiser Family Foundation*
 - [Key Questions About COVID-19 Vaccine Mandates](#)





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- [Supply vs Demand: When Will the Scales Tip on COVID-19 Vaccination in the U.S?](#)
- *JAMA News*
 - [Fear of Adverse Effects and COVID-19 Vaccine Hesitancy: Recommendations of the Treatment Expectation Expert Group](#)
 - [As Employers and Colleges Introduce COVID-19 Vaccine Mandates, Wider Use “Remains an Open Question”](#)
 - [A Tale of 2 Viruses and 2 Vaccines—Perspectives From 2 Stages of Life](#)
 - [Indoor Air Changes and Potential Implications for SARS-CoV-2 Transmission](#)
 - [Pathway Eased for Serial COVID-19 Screening Tests](#)
- *CVS Press Releases*
 - [Over-the-counter COVID-19 testing now available at CVS Pharmacy](#)
- *Oxford University Press Releases*
 - [Human challenge trial launches to study immune response to COVID-19](#)
- *Business Wire*
 - [Merck and Ridgeback Biotherapeutics Provide Update on Progress of Clinical Development Program for Molnupiravir, an Investigational Oral Therapeutic for the Treatment of Mild-to-Moderate COVID-19](#)
- *Cision PR Newswire*
 - [Romark Announces Initial Results Of Phase 3 Clinical Trial Of NT-300 Tablets For The Treatment Of COVID-19](#)
- *Los Alamos Laboratory Press Releases*
 - [Simulations reveal how dominant SARS-CoV-2 strain binds to host, succumbs to antibodies](#)
- *FUJIFILM Press Releases*
 - [Fujifilm announces the Start of a New Phase III Clinical Trial of Anti-influenza Drug Avigan® Tablet in Japan, Targeting COVID-19 Patients](#)
- *KQED*
 - [‘People Are Dying as We Wait’: Bid to Tighten California Nursing Home Oversight Sputters](#)
 - [Without Walls: How Some LA and OC Schools Are Embracing Outdoor Learning](#)
- *Intelligencer*
 - [Why Public Schools Shouldn’t Offer a Remote Option This Fall](#)
- *Moneywise*
 - [You may soon be getting a COVID 'stimulus check' from your health insurer](#)
- *Anchorage Daily News*
 - [Alaska will offer COVID-19 vaccines to tourists starting June 1](#)
- *USA Today*
 - [Michigan was warned about the British COVID-19 variant, but many ignored it](#)
 - [Is herd immunity to COVID-19 possible? Experts increasingly say no.](#)
- *The Atlanta Journal-Constitution*
 - [Emory, Atlanta’s HBCUs to require students get COVID-19 vaccine](#)
- *Huffpost*
 - [Turns Out Otters Can Get COVID-19, Too](#)
- *SFGate*
 - [‘This result is not unexpected’: 39 vaccinated residents from Bay Area county test Covid positive](#)





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- *ABC News*
 - [Californians to start receiving one-time \\$600 payments as part of state's COVID relief package](#)
- *Los Angeles Times*
 - [Dragging the family to get a COVID-19 vaccine, one arm at a time](#)
 - [California's coronavirus case rate now the lowest in the continental U.S.](#)
 - [For some of us, returning to pre-COVID life is turning out to be harder than we expected](#)
- *Sacramento Bee*
 - [Nearly a third of Californians are fully vaccinated. Half have had at least one shot](#)
- *The Mercury News*
 - [Months into rollout, barriers hinder vaccine access for Latino and Black Californians](#)
- *San Francisco Chronicle*
 - [Bay Area residents flood vaccination sites as eligibility opens, but supply remains limited](#)
 - [COVID vaccination options for homebound people scarce in Bay Area. Here's what we know](#)
 - [A new wrinkle: Napa County sees few takers for thousands of vaccination appointments](#)
 - [New wrinkle in Bay Area: Slowdown in interest for thousands of vaccination slots](#)
 - [California hit a crucial benchmark for vaccine equity. What happens now that it's open season?](#)
 - [Marin County may be first in Bay Area to enter yellow tier](#)
 - [California coronavirus variants 20% more infectious, resistant to antibodies, new study finds](#)
 - [New, antibody-resistant coronavirus variant discovered in Texas](#)

EPIDEMIOLOGY UPDATES

- **CDC COVID Data Tracker**
 - [United States COVID-19 Cases and Deaths by State](#)
 - [CDC COVID Data Tracker: Vaccinations](#)
 - **NEW** - [CDC US COVID-19 Cases Caused by Variants](#)
- **US Leads the World in Confirmed COVID-19 Cases** per [Johns Hopkins University Center for Systems Science and Engineering Dashboard Website](#)
- **Johns Hopkins COVID-19 in the USA** – daily summary of key data on COVID-19 in the U.S.
- **California COVID-19 by the numbers** are available on the [CDPH Website](#) and the [NYT Map and Table](#) (includes data by county)
 - **California COVID-19 Statewide Update as of April 23, 2021**
- [San Mateo County COVID-19 Dashboard](#)
- [Santa Clara County COVID-19 Dashboard](#)

ADDITIONAL COVID-19 RESOURCES

- [San Mateo County COVID-19 Guidance and Resources for Clinicians and Facilities – COVID-19 Digests](#)
- [Palo Alto Online tracking the coronavirus in San Mateo and Santa Clara counties](#)
- [California COVID-19 Data and Tools](#)
- [CDPH COVID-19 Assessment and Modeling Tool](#)
- [California Department of Corrections and Rehabilitations Population COVID-19 Tracking Dashboards](#)
- [CDC Interactive Serology Dashboard for Commercial Laboratory Surveys](#)
- [Children and COVID-19: State-Level Data Report](#)
- [HHS Coronavirus Data Hub](#)
- [COVID-19 Nursing Home Data](#)

