



COVID-19 Digest Issue 69

December 31, 2021

CLINICAL PEARLS

- **FDA recently authorized two oral antiviral drugs for the treatment of COVID-19: Paxlovid and Molnupiravir**
 - **[The US Food and Drug Administration \(FDA\) has issued an Emergency Use Authorization \(EUA\)](#) for Pfizer's Paxlovid (nirmatrelvir tablets and ritonavir tablets, co-packaged for oral use) for the treatment of mild-to-moderate COVID-19 in adults and pediatric patients (12 years of age and older, weighing at least 40 kilograms) who have a laboratory confirmed diagnosis of SARS-CoV-2 infection and who are at high risk for progression to severe COVID-19, including hospitalization or death.**
 - "Paxlovid is available by prescription only and **should be initiated as soon as possible after diagnosis of COVID-19 and within five days of symptom onset,**" the FDA stated, noting that "[the drug] is not authorized for the pre-exposure or post-exposure prevention of COVID-19 or for initiation of treatment in those requiring hospitalization due to severe or critical COVID-19."
 - According to the agency, **Paxlovid is administered as three tablets (two tablets of nirmatrelvir and one tablet of ritonavir) taken together orally twice daily for five days, for a total of 30 tablets. Paxlovid is not authorized for use for longer than five consecutive days.**
 - Further, the FDA noted that the primary data supporting the EUA for Paxlovid are from EPIC-HR, a randomized, double-blind, placebo-controlled clinical trial studying Paxlovid for the treatment of non-hospitalized symptomatic adults with a laboratory confirmed diagnosis of SARS-CoV-2 infection. Patients were adults 18 years of age and older with a prespecified risk factor for progression to severe disease or were 60 years and older regardless of prespecified chronic medical conditions. All patients had not received a COVID-19 vaccine and had not been previously infected with COVID-19. The main outcome measured in the trial was the proportion of people who were hospitalized due to COVID-19 or died due to any cause during 28 days of follow-up.
 - "**Paxlovid significantly reduced the proportion of people with COVID-19 related hospitalization or death from any cause by 88% compared to placebo among patients treated within five days of symptom onset and who did not receive COVID-19 therapeutic monoclonal antibody treatment.** In this analysis, 1,039 patients had received Paxlovid, and 1,046 patients had received placebo and among these patients, 0.8% who received Paxlovid were hospitalized or died during 28 days of follow-up compared to 6% of the patients who received placebo," the agency stated.
 - **Using Paxlovid in people with uncontrolled or undiagnosed HIV-1 infection may lead to HIV-1 drug resistance. Ritonavir may cause liver damage, so caution should be used when giving Paxlovid to patients with preexisting liver disease, liver enzyme abnormalities or liver inflammation.**
 - Paxlovid is contraindicated in patients with a history of clinically significant hypersensitivity reactions [e.g., toxic epidermal necrolysis (TEN) or Stevens-Johnson syndrome] to its active ingredients (nirmatrelvir or ritonavir) or any other components of the product. **Paxlovid is contraindicated with drugs that are highly dependent on CYP3A for clearance** and for which elevated concentrations are associated with serious and/or life-threatening reactions. **Paxlovid is also contraindicated with drugs that are potent CYP3A inducers** where significantly reduced nirmatrelvir or ritonavir plasma concentrations may be associated with the potential for loss of virologic response and possible resistance. **For a complete list of drugs that should not be taken in combination with Paxlovid, see [this fact sheet](#)** for healthcare providers.
 - **Possible side effects of Paxlovid include dysgeusia, diarrhea, hypertension, and myalgias.**





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- According to interim results from an international phase 3 [clinical trial](#), early treatment with Merck's [molnupiravir](#) nearly halved the risk of hospitalization and death in at-risk, unvaccinated COVID-19 patients.
 - Researchers randomly assigned non-hospitalized, unvaccinated adults with mild to moderate COVID-19, at least one risk factor for severe illness, and symptom onset within the previous 5 days to receive either molnupiravir, a nucleoside analogue that inhibits SARS-CoV-2 replication by viral mutagenesis, or a placebo twice daily for 5 days.
 - Participants were enrolled at 78 sites in 15 countries. Among 1,433 participants in the interim analysis, 716 received molnupiravir, and 717 received placebo. **The risk of all-cause hospitalization or death by 29 days was nearly halved in molnupiravir recipients (28 of 385 [7.3%]), relative to placebo (53 of 377 [14.1%]). In an analysis of all randomized participants, 48 of 709 (6.8%) participants in the molnupiravir group were hospitalized or died by 29 days, compared with 68 of 699 (9.7%) in the placebo group.**
 - **The FDA has authorized Molnupiravir for the treatment of mild-to-moderate COVID-19 in adults with positive results of direct SARS-CoV-2 viral testing who are at high risk for progressing to severe COVID-19, including hospitalization or death, and for whom alternative COVID-19 treatment options authorized by FDA are not accessible or clinically appropriate.**
 - Molnupiravir is administered as four 200 milligram capsules taken orally every 12 hours for five days, for a total of 40 capsules. Molnupiravir is not authorized for use for longer than five consecutive days.
 - **Molnupiravir is not authorized for the pre-exposure or post-exposure prevention of COVID-19 or for initiation of treatment in patients hospitalized due to COVID-19 because benefit of treatment was not observed in people when treatment started after hospitalization.**
 - Based on findings from animal reproduction studies, **molnupiravir may cause fetal harm.** Therefore, **molnupiravir is not recommended for use during pregnancy.**
 - **Molnupiravir is not authorized for use in patients less than 18 years of age because it may affect bone and cartilage growth.**
 - **The most common side effects observed in the clinical trial included diarrhea (1.7% vs 2.1%), nausea (1.4% vs 0.7%), and dizziness (1.0% vs 0.7%).**
 - **For more details about Molnupiravir, see this [fact sheet](#) for healthcare providers.**
- **Omicron and monoclonal antibodies:**
 - According to the latest edition of the [NIH COVID-19 treatment guidelines](#), when the Omicron variant represents the majority (e.g., >80%) of infections in a region, it is expected that **bamlanivimab plus etesevimab and casirivimab plus imdevimab will not be active for treatment or post-exposure prophylaxis (PEP) of COVID-19.**
 - In this setting, the NIH Panel recommends using 1 of the following options to treat non-hospitalized patients with mild to moderate COVID-19 who are at high risk of clinical progression:
 - **Sotrovimab** 500 mg IV as a single infusion administered as soon as possible and within 10 days of symptom onset; *or*
 - **Remdesivir** 200 mg IV on Day 1, then 100 mg once daily on Days 2 and 3 initiated as soon as possible and within 7 days of symptom onset.
 - Because remdesivir requires IV infusion for 3 consecutive days, logistical constraints may make it difficult to administer the drug in some settings.
 - Remdesivir should be administered in a setting where management of severe hypersensitivity reactions, such as





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- anaphylaxis, is possible. Patients should be monitored during the infusion and observed for at least 1 hour after the infusion.
- Remdesivir is currently FDA-approved for hospitalized individuals; however, use of the drug for outpatient treatment would be an off-label indication.
- If neither sotrovimab nor remdesivir are feasible to use, and the Delta VOC still represents a significant, but not dominant proportion (e.g., $\geq 20\%$) of infections in the region:
 - Patients could be offered bamlanivimab plus etesevimab or casirivimab plus imdevimab with the understanding that treatment would be ineffective if they are infected with the Omicron variant.
 - Consider the use of bamlanivimab plus etesevimab or casirivimab plus imdevimab for PEP on a case-by-case basis with the understanding that the drugs may be ineffective if the person has been exposed to the Omicron variant.

PUBLIC HEALTH UPDATES

- [CDC Updates and Shortens Recommended Isolation and Quarantine Period for General Population](#)
- FDA
 - [FDA Authorizes First Oral Antiviral for Treatment of COVID-19](#)
 - [FDA Authorizes Additional Oral Antiviral for Treatment of COVID-19 in Certain Adults](#)
 - [SARS-CoV-2 Viral Mutations: Impact on COVID-19 Tests](#)
- California State Public Health Officer Order
 - [Health Care Worker Vaccine Requirement](#)
 - [Adult Care Facilities and Direct Care Worker Vaccine Requirement](#)
 - [State and Local Correctional Facilities and Detention Centers Health Care Worker Vaccination Requirement](#)
- WHO
 - [Interim statement on booster doses for COVID-19 vaccination](#)
 - News: [WHO lists 10th COVID-19 vaccine for emergency use: Nuvaxovid](#)
- European Commission
 - [EU Digital COVID Certificate: Commission adopts binding acceptance period of nine months for vaccination certificates](#)

GUIDANCE

- CDC Health Advisory: [Rapid Increase of Omicron Variant Infections in the United States: Management of Healthcare Personnel with SARS-CoV-2 Infection or Exposure](#)
- Updated CDC [Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States](#)
- [CDC Encourages Healthcare Providers to Recommend COVID-19 Self-testing Before Holiday Gatherings](#)
- CDPH Health Alert: [Authorization of Molnupiravir for Treatment of Mild to Moderate COVID-19, Distribution, Patient Prioritization, and Ethical Considerations](#)
- NIH: [The COVID-19 Treatment Guidelines Panel's Interim Statement on Patient Prioritization for Outpatient Anti-SARS-CoV-2 Therapies or Preventive Strategies When There are Logistical or Supply Constraints](#)





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RESOURCES

- CDC/IDSA COVID-19 Clinician Call: [Omicron — Continued; Plus Monoclonal Antibody Therapy Updates](#)
- IDSA
 - Vaccine Education Roundtable Series: [Pediatric Vaccine Rollout and Updates](#)
 - Podcasts:
 - [Omicron: What We Know So Far](#)
 - [Combatting COVID-19 Misinformation + Omicron Update](#)
 - Media Briefing: [How COVID-19 Affects the 2021 Holiday Season](#)
 - COVID-19 IDSA Rapid Living Guidelines: [Celebrations and Challenges](#)
- UCSF Department of Medicine Grand Rounds: [Omicron in Mid-December: What Have We Learned and What Does it Mean?](#)
- Center for Infectious Disease Research and Policy (CIDRAP) Osterholm Update:
 - [Episode 82: A Viral Blizzard](#)
 - [Episode 83: On Viral Time](#)
 - [Episode 84: Imperfect situations and imperfect solutions](#)
- Kaiser Family Foundation
 - [Health System Tracker - COVID-19 breakthrough hospitalizations](#)
 - [COVID-19 Vaccine Monitor: Early Omicron Update](#)

ACADEMIC/RESEARCH PAPERS

- *New England Journal of Medicine*
 - [Molnupiravir for Oral Treatment of Covid-19 in Nonhospitalized Patients](#)
 - [Efficacy and Safety of NVX-CoV2373 in Adults in the United States and Mexico](#)
 - [Covid-19 Rates by Time since Vaccination during Delta Variant Predominance](#)
- *The Lancet*
 - [Efficacy and safety of two neutralising monoclonal antibody therapies, sotrovimab and BRII-196 plus BRII-198, for adults hospitalised with COVID-19 \(TICO\): a randomised controlled trial](#)
- *Clinical Infectious Diseases*
 - [Neutralization of SARS-CoV-2 Omicron variant by sera from BNT162b2 or Coronavac vaccine recipients](#)
- *medRxiv*
 - [mRNA-based COVID-19 vaccine boosters induce neutralizing immunity against SARS-CoV-2 Omicron variant](#)
 - [Enhanced neutralization against SARS-CoV-2 by vaccine booster exhibits reduction of Omicron variant](#)
 - [Early assessment of the clinical severity of the SARS-CoV-2 Omicron variant in South Africa](#)
- *BMJ*
 - [Effectiveness of mRNA-1273 against delta, mu, and other emerging variants of SARS-CoV-2: test negative case-control study](#)
 - [SARS-CoV-2 vaccination and myocarditis or myopericarditis: population based cohort study](#)
- *JAMA*
 - [Estimated Effectiveness of COVID-19 Messenger RNA Vaccination Against SARS-CoV-2 Infection Among Older Male Veterans Health Administration Enrollees, January to September 2021](#)





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- [Antibody Response and Variant Cross-Neutralization After SARS-CoV-2 Breakthrough Infection](#)
- [Metabolic Syndrome and Acute Respiratory Distress Syndrome in Hospitalized Patients With COVID-19](#)
- [Global Percentage of Asymptomatic SARS-CoV-2 Infections Among the Tested Population and Individuals With Confirmed COVID-19 Diagnosis - A Systematic Review and Meta-analysis](#)
- [Incidence and Estimated Vaccine Effectiveness Against Symptomatic SARS-CoV-2 Infection Among Persons Tested in US Retail Locations, May 1 to August 7, 2021](#)
- [Emergency Use Authorizations of COVID-19–Related Medical Products](#)
- [Factors Associated With Severe Gastrointestinal Diagnoses in Children With SARS-CoV-2 Infection or Multisystem Inflammatory Syndrome](#)
- [Multisystem Inflammatory Syndrome in Children by COVID-19 Vaccination Status of Adolescents in France](#)
- [Maternal and Neonatal SARS-CoV-2 Immunoglobulin G Antibody Levels at Delivery After Receipt of the BNT162b2 Messenger RNA COVID-19 Vaccine During the Second Trimester of Pregnancy](#)
- *The Journal of Infectious Diseases*
 - [SARS-CoV-2 infection during pregnancy and associated perinatal health outcomes: a national US cohort study](#)
- *Nature*
 - [Risk factors for PICU admission and death among children and young people hospitalized with COVID-19 and PIMS-TS in England during the first pandemic year](#)
- *Emerging Infectious Diseases*
 - [Severe Acute Respiratory Syndrome Coronavirus 2 and Respiratory Virus Sentinel Surveillance, California, USA, May 10, 2020–June 12, 2021](#)
 - [Multistate Outbreak of SARS-CoV-2 Infections, Including Vaccine Breakthrough Infections, Associated with Large Public Gatherings, United States](#)
 - [Transmission Dynamics of Large Coronavirus Disease Outbreak in Homeless Shelter, Chicago, Illinois, USA, 2020](#)
 - [Mask Effectiveness for Preventing Secondary Cases of COVID-19, Johnson County, Iowa, USA](#)
 - [Risk Factors for SARS-CoV-2 Infection Among US Healthcare Personnel, May–December 2020](#)
 - [Systematic Genomic and Clinical Analysis of Severe Acute Respiratory Syndrome Coronavirus 2 Reinfections and Recurrences Involving the Same Strain](#)
 - [Coronavirus Disease Case Definitions, Diagnostic Testing Criteria, and Surveillance in 25 Countries with Highest Reported Case Counts](#)
 - [SARS-CoV-2 RNA Shedding in Semen and Oligozoospermia of Patient with Severe Coronavirus Disease 11 Weeks after Infection](#)
 - [Effectiveness of International Travel Controls for Delaying Local Outbreaks of COVID-19](#)
 - [Monitoring International Travelers Arriving in Hong Kong for Genomic Surveillance of SARS-CoV-2](#)
 - [Airborne Transmission of SARS-CoV-2 Delta Variant within Tightly Monitored Isolation Facility, New Zealand \(Aotearoa\)](#)
 - [Effects of Nonpharmaceutical COVID-19 Interventions on Pediatric Hospitalizations for Other Respiratory Virus Infections, Hong Kong](#)
 - [Epidemiology of COVID-19 after Emergence of SARS-CoV-2 Gamma Variant, Brazilian Amazon, 2020–2021](#)
 - [Cluster of SARS-CoV-2 Gamma Variant Infections, Parintins, Brazil, March 2021](#)
 - [Emergence of SARS-CoV-2 Delta Variant, Benin, May–July 2021](#)





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- [Use of Private Sector Workforce Respiratory Disease Short-Term Disability Claims to Assess SARS-CoV-2, Mexico, 2020](#)
- [Coronavirus Disease Spread during Summer Vacation, Israel, 2020](#)
- [Low Seroprevalence among Undetected COVID-19 Cases, Faroe Islands, November 2020](#)
- [Postmortem Antigen-Detecting Rapid Diagnostic Tests to Predict Infectivity of SARS-CoV-2—Associated Deaths](#)
- [Limited Propagation of SARS-CoV-2 among Children in a Childcare Center, Canada, 2021](#)
- *Eurosurveillance*
 - [Outbreak caused by the SARS-CoV-2 Omicron variant in Norway, November to December 2021](#)
 - [Epidemiological characterisation of the first 785 SARS-CoV-2 Omicron variant cases in Denmark, December 2021](#)
- *PLOS*
 - [Analysis of the initial lot of the CDC 2019–Novel Coronavirus \(2019-nCoV\) real-time RT-PCR diagnostic panel](#)
 - [Modeling the onset of symptoms of COVID-19: Effects of SARS-CoV-2 variant](#)
- *The University of Texas Austin*
 - [COVID-19 Scenario Projections: The Emergence of Omicron in the US](#)
- *The University of Edinburgh*
 - [Severity of Omicron variant of concern and vaccine effectiveness against symptomatic disease: national cohort with nested test negative design study in Scotland](#)
- *Imperial College London*
 - [Report 50 - Hospitalisation risk for Omicron cases in England](#)
 - [Report 49 - Growth, population distribution and immune escape of Omicron in England](#)

MMWR

- [COVID-19 Vaccine Safety in Children Aged 5–11 Years — United States, November 3–December 19, 2021](#)
- [Interim Estimate of Vaccine Effectiveness of BNT162b2 \(Pfizer-BioNTech\) Vaccine in Preventing SARS-CoV-2 Infection Among Adolescents Aged 12–17 Years — Arizona, July–December 2021](#)
- [Characteristics and Clinical Outcomes of Children and Adolescents Aged <18 Years Hospitalized with COVID-19 — Six Hospitals, United States, July–August 2021](#)
- [Investigation of a SARS-CoV-2 B.1.1.529 \(Omicron\) Variant Cluster — Nebraska, November–December 2021](#)
- [Evaluation of a Test to Stay Strategy in Transitional Kindergarten Through Grade 12 Schools — Los Angeles County, California, August 16–October 31, 2021](#)
- [Evaluation of Test to Stay Strategy on Secondary and Tertiary Transmission of SARS-CoV-2 in K–12 Schools — Lake County, Illinois, August 9–October 29, 2021](#)





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HOT OFF THE (LAY) PRESS

- *New York Times*
 - [The F.D.A. is expected on Monday to allow boosters of Pfizer's vaccine for 12- to 15-year-olds, according to those familiar with the plan.](#)
 - [As At-Home Tests Surge, Doubts Rise About Accuracy of Public Covid Counts](#)
 - [Covid vaccines rarely lead to problems in younger children, according to two C.D.C. reports.](#)
 - [Johnson & Johnson's booster shot offered strong protection against Omicron and reduced the risk of hospitalization, a clinical trial found](#)
 - [As Omicron Spreads, Officials Ponder What It Means to Be 'Fully Vaccinated'](#)
 - [To minimize disruptions as virus cases surged, the C.D.C. halved the recommended isolation period for infected Americans to five days.](#)
 - [C.D.C. Shortens Covid Isolation Period for Health Care Workers](#)
 - [Beleaguered by Omicron, New York Operates at Half Speed](#)
 - [The C.D.C. lowered its estimate of Omicron's prevalence in the U.S., showing the agency's struggle to communicate its uncertainty.](#)
 - [The U.S. is averaging 267,000 daily coronavirus cases, a record as two highly contagious variants converge and threaten to overwhelm hospitals.](#)
 - [An early Omicron cluster in the U.S. suggests the variant has a shorter incubation period](#)
 - [As Omicron Spreads and Cases Soar, the Unvaccinated Remain Defiant](#)
 - [Thousands more flights were canceled on Monday as Omicron surged. Dr. Anthony Fauci said a vaccine mandate for air travel should be considered.](#)
 - [As Omicron Overshadows Christmas, Thousands of Flights Are Canceled](#)
 - [Holiday Spirit Glimmers as New York Endures Another Pandemic Christmas](#)
 - [As Covid Surges, Experts Say U.S. Booster Effort Is Far Behind](#)
 - [With Omicron, U.S. Testing Capacity Faces Intense Pressure](#)
 - [Doctors and Nurses Are 'Living in a Constant Crisis' as Covid Fills Hospitals](#)
 - [A federal appeals court reinstated a Biden administration rule requiring that many large companies mandate vaccines or weekly Covid testing.](#)
 - [The C.D.C. recommends that other vaccines be preferred over J&J](#)
 - [Only the Pfizer and Moderna shots, when reinforced by a booster, appear to stop Omicron infections](#)
 - [Moderna says its booster significantly raises the level of antibodies to thwart Omicron.](#)
 - [Pfizer said its two-shot vaccine didn't perform adequately in children 2 to 5, and it will test a three-dose series for official authorization.](#)
 - [The C.D.C. said unvaccinated students exposed to the coronavirus can remain in school if they undergo testing after exposure.](#)
 - [President Biden will lift the travel ban between the U.S. and southern Africa at midnight on Dec. 31, a White House official said.](#)
 - [F.D.A. Clears Pfizer's Covid Pill for High-Risk Patients 12 and Older](#)
 - [Omicron is now the most common variant among new Covid cases in the U.S., accounting for nearly three-quarters of new infections, the C.D.C. said.](#)
 - [Omicron Infections Seem to Be Milder, Three Research Teams Report](#)
 - [Biden Promised 500 Million Tests, but Americans Will Have to Wait](#)
 - [National Guard Empties Bedpans and Clips Toenails at Nursing Homes](#)
 - [Omicron Will Surge Despite Biden's New Plan, Scientists Say](#)
 - [New York officials announce Omicron strategies, including at-home tests by mail](#)
 - [Supreme Court to Hold Special Hearing on Biden Vaccine Mandates](#)





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- [Reports of new coronavirus infections in South Africa are beginning to slow, suggesting its Omicron wave may have peaked, researchers said.](#)
- [The F.D.A. cleared Pfizer's Covid pill, the first of its kind, for high-risk patients 12 and over. It was found to defend against severe illness.](#)
- ["This is not March of 2020." President Biden tried to calm fears of lockdowns, outlined his Omicron plan and urged more people to get vaccinated.](#)
- [N.H.L. players are not expected to participate in the 2022 Beijing Olympics, reversing earlier plans amid a rise in coronavirus cases.](#)
- *The Hill*
 - [Biden administration pushes COVID-19 'test-to-stay' policy in schools](#)
 - [Biden resists shutdowns as omicron threat rises](#)
- *Politico*
 - [Bad Covid winter brings questions about what's 'fully vaccinated'](#)
 - ['Nothing's been good enough': Biden admits Covid testing has fallen short](#)
 - [HHS forecast shows Omicron stretching U.S. Covid testing supply](#)
- *Business Insider*
 - [Rapid tests do not always detect Omicron — here's how to know for sure if you've got COVID-19 or not](#)
- *The Wall Street Journal*
 - [Covid-19 Tests Get Harder to Find as Omicron Variant Spreads](#)
 - [Life Expectancy in U.S. Declined 1.8 Years in 2020, CDC Says](#)
- *The Washington Post*
 - [Biden is prioritizing rapid testing to counter omicron. Other countries are far ahead.](#)
 - [As the omicron variant threatens to wipe out monoclonal antibodies, the U.S. is saving up one that will still work](#)
- *Science*
 - [Early lab studies hint Omicron may be milder. But most scientists reserve judgment](#)
- *The New Yorker*
 - [How to Think About the Risks of Omicron](#)
- *AP News*
 - [Across services, troops face discipline for refusing vaccine](#)
 - [Chicago to require proof of vaccination at restaurants, bars](#)
- *NPR*
 - [U.S. could see 1 million cases per day, warns departing NIH director Francis Collins](#)
 - [Israel is set to offer 4th shot of COVID-19 vaccine in coming days](#)
- *Bloomberg*
 - [Omicron May Double Risk of Getting Infected on Planes, IATA Says](#)
- *Popular Science*
 - [Why Omicron means we all need boosters](#)
- *Moderna Press Releases*
 - [MODERNA ANNOUNCES PRELIMINARY BOOSTER DATA AND UPDATES STRATEGY TO ADDRESS OMICRON VARIANT](#)
- *Pfizer Press Releases*
 - [PFIZER AND BIONTECH PROVIDE UPDATE ON ONGOING STUDIES OF COVID-19 VACCINE](#)





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- *Regeneron Press Releases*
 - [Regeneron's Next Generation Monoclonal Antibodies are Active Against All Known Variants of Concern, Including Both Omicron and Delta](#)
- *Defense One*
 - [US Army Creates Single Vaccine Against All COVID & SARS Variants, Researchers Say](#)
- *The Commonwealth Funds*
 - [The U.S. COVID-19 Vaccination Program at One Year: How Many Deaths and Hospitalizations Were Averted?](#)
- *EurekAlert!*
 - [Critically ill COVID-19 patients with acute kidney injury more likely to die than those with pre-existing chronic kidney disease](#)
- *Imperial College London News*
 - [Omicron largely evades immunity from past infection or two vaccine doses](#)
- *Hong Kong University News*
 - [HKUMed finds Omicron SARS-CoV-2 can infect faster and better than Delta in human bronchus but with less severe infection in lung](#)
- *Mercury News*
 - [Bay Area residents scramble to find COVID-19 tests as omicron cases soar](#)
- *Los Angeles Times*
 - [Will this pandemic ever end? Here's what happened with the last ones](#)
 - [California braces for winter COVID surge as cases continue to rise](#)
 - [California Omicron surge arrives as cases spike, officials warn of tough weeks ahead](#)
 - [2021 is on track to surpass 2020 as the nation's deadliest year](#)
- *San Francisco Chronicle*
 - [Here are the latest numbers as omicron cases skyrocket in California](#)
 - [California to shorten COVID quarantine, isolation times following new CDC guidance](#)
 - [Parts of Bay Area see 'vertical wall' jump in COVID cases as omicron spreads](#)
 - [The new antiviral COVID pills are on their way to the Bay Area — but will be in short supply](#)
 - [San Francisco case rates double in five days as omicron tightens grip](#)
 - [Bay Area COVID testing ramps up as omicron arrives. Will it be enough?](#)
 - [Santa Clara County with 10 cases of omicron warns of 'deluge' ahead](#)

EPIDEMIOLOGY UPDATES

- [CDC COVID Data Tracker](#)
 - [COVID-19 Vaccinations in the United States](#)
- [Johns Hopkins COVID-19 in the USA](#) – daily summary of key data on COVID-19 in the U.S.
- [American Academy of Pediatrics Children and COVID-19: State Level Data Report](#)
- [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 December 31, 2021
- [San Mateo County COVID-19 Dashboard](#)
- [Santa Clara County COVID-19 Dashboard](#)





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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](#)
- [HHS Coronavirus Data Hub](#)
- [COVID-19 Nursing Home Data](#)

