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CALTCM COVID-19 Webinar Series

September 27, 2021

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2021 Webinar Schedule

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Webinar Faculty

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Webinar Faculty

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Webinar Faculty

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Licensed Administrator
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Webinar Faculty

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Assistant Professor

College of Pharmacy

Western University

Board-Certified Pharmacotherapy Specialist
(BCPS)

Board Certified Geriatric Pharmacist (BCGP)

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2021 FALL INFLUENZA VACCINATION & COVID-19 VACCINE BOOSTER



COVID-19 Vaccination Record Card			
Please keep this record card, which includes medical information about the vaccines you have received.			
Por favor, guarde esta tarjeta de registro, que incluye información médica sobre las vacunas que ha recibido.			
Last Name		First Name	MI
Date of birth		Patient number (medical record or IIS record number)	
Vaccine	Product Name/Manufacturer Lot Number	Date	Healthcare Professional or Clinic Site
1 st Dose COVID-19		mm / dd / yy	
2 nd Dose COVID-19		mm / dd / yy	
Other		mm / dd / yy	
Other		mm / dd / yy	

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Speaker

Jason Wong, PharmD, BCPS, BCGP

Assistant Professor

Western University of Health Sciences, Pomona, CA

American Pharmacist Association Faculty Trainer

- Pharmacy-Based Immunization Delivery
- Pharmacy-Based Immunization Administration By Pharmacy Technicians
- Pharmacy-Based Travel Health Services



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Learning Objectives

1. Review the 2021-22 Influenza vaccine
2. Discuss the influenza vaccination strategies under the COVID-19 pandemic
3. Review the current COVID-19 cases in LTCFs residents and healthcare providers
4. Discuss breakthrough COVID-19 infections in LTCFs
5. Review current CDC recommendations for booster COVID-19 vaccination in LTCFs



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2021–22 Influenza Vaccine

[All 2021-22 influenza vaccines will be quadrivalent](#)

- Quadrivalent Egg-based Vaccines (IIV4, IIV4-HD, LAIV4, aIIV3/4)
 - A/Victoria/2570/2019 (H1N1)pdm09-like virus
 - changed from 2020-2021 vaccine
 - A/Cambodia/e0826360/2020 (H3N2)-like virus
 - changed from 2020-2021 vaccine
 - B/Washington/02/2019 (Victoria lineage)
 - B/Phuket/3073/2013 (Yamagata lineage)
- Quadrivalent Cell or Recombinant-based Vaccines (ccIIV4, RIV4)
 - A/Wisconsin/588/2019 (H1N1)pdm09-like virus instead of A/Victoria/2570/2019 (H1N1)pdm09-like virus



1. Grohskopf LA, Alyanak E, Ferdinands JM, et al. MMWR Recomm Rep 2021. DOI: <http://dx.doi.org/10.15585/mmwr.r7005a1>
2. United States Food and Drug Administration. Influenza Vaccine for the 2021-2022 Season. Updated 9/15/21.

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ACIP Recommendation: 21-22 Influenza Season

- **When should we begin influenza vaccination?**
 - No earlier than September and no later than October
- **How long should we provide influenza vaccination?**
 - Continue vaccinating until your supply is gone, even after influenza activity begins
- **What are the recommendations for influenza vaccinations for LTCFs?**
 - It is recommended that everyone living or working in a LTCF receive an influenza vaccine



1. Grohskopf LA, Alyanak E, Ferdinands JM, et al. MMWR Recomm Rep 2021. DOI: <http://dx.doi.org/10.15585/mmwr.r7005a1>

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ACIP Recommendation: 21-22 Influenza Season

- **Which flu vaccines are recommended if a person is over 65 years old?**
 - Fluzone high-dose (Sanofi Pasteur) IIV4
 - Flud (Seqirus) IIV4?
- **Which flu vaccines should be avoided for people who are immunocompromised?**
 - Patients and caregivers should not receive the LAIV4 nasal spray flu vaccine because it contains live virus



1. Grohskopf LA, Alyanak E, Ferdinands JM, et al. MMWR Recomm Rep 2021. DOI: <http://dx.doi.org/10.15585/mmwr.r7005a1>

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Influenza Vaccination Strategies

- Prioritize healthcare workers, adults aged 50 years or older, and people with medical conditions
 - Healthcare workers are at increased risk of exposure
 - Healthcare workers interact with people at increased risk of developing severe disease
 - Vaccinating older adults and people with medical conditions reduces risk of severe disease and hospitalization
- Combine influenza vaccination with other vaccinations or healthcare visits
- Communicate with healthcare workers and LTC residents who have concerns with vaccination



3. Wang X, et al. Influenza vaccination strategies for 2020-21 in the context of COVID-19. J Glob Health. 2020.

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Recap

So far, we have talked about...

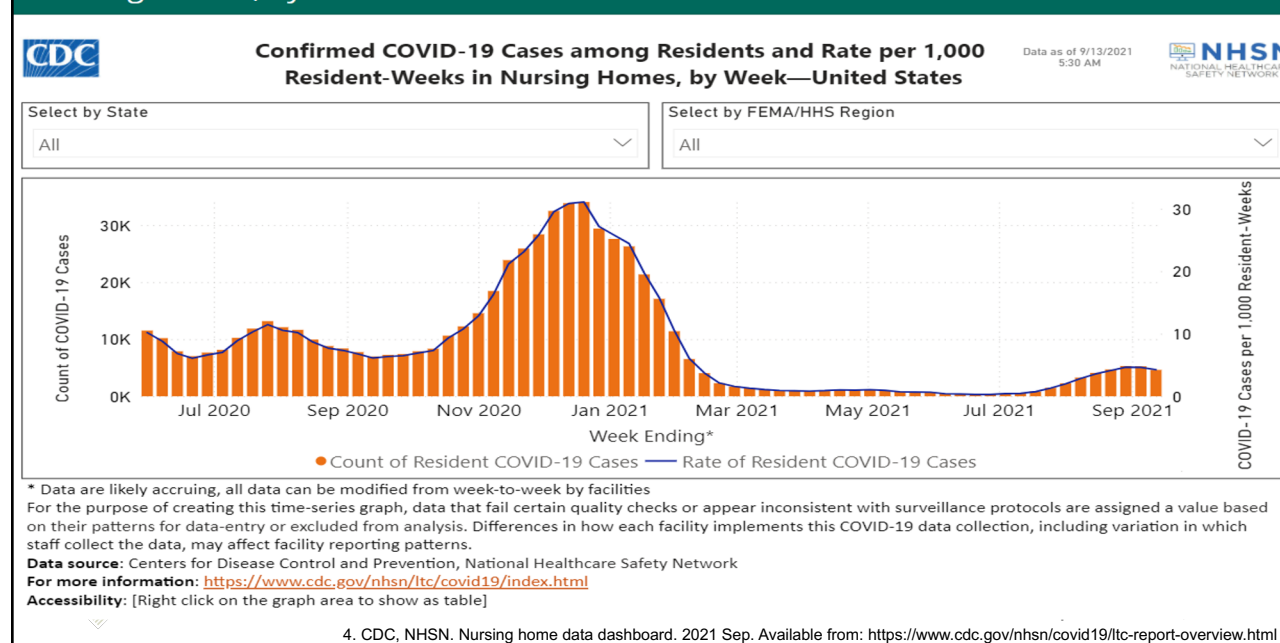
- Using high-dose flu vaccines in adults ≥ 65 y.o.
- Starting vaccinations in September and continuing through October or until the vaccine supply is exhausted
- Prioritizing healthcare workers and people with high-risks for severe disease
- Using communication techniques to address concerns with vaccination
- Combining flu vaccination with other vaccines or healthcare visits to boost vaccination rates



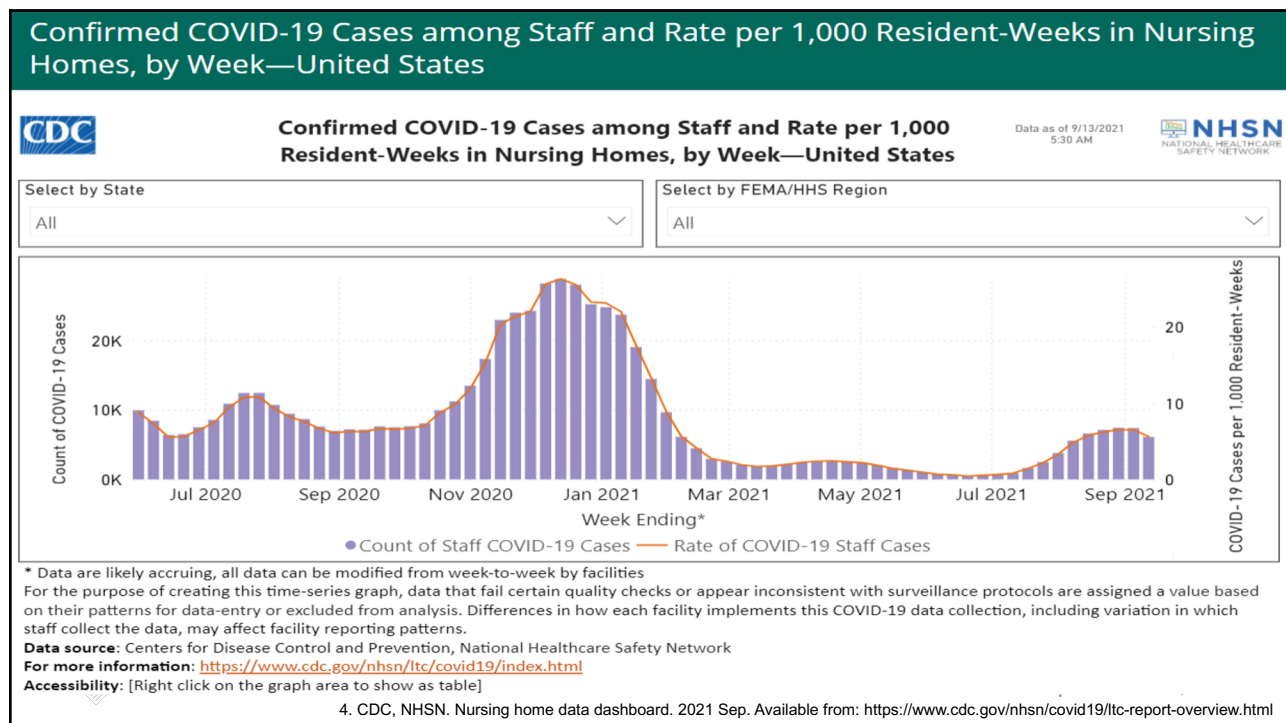
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Confirmed COVID-19 Cases among Residents and Rate per 1,000 Resident-Weeks in Nursing Homes, by Week—United States



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Breakthrough COVID-19 Infections

- Data collected by the Chicago Dept. of Public Health
- Estimated 7,931 residents and 6,834 staff members at 78 Skilled Nursing Facilities (SNFs) received two doses of COVID-19 vaccine since vaccination efforts started
- Breakthrough infections were reported by 15 of 75 SNFs with confirmed COVID-19 infections

Postvaccination SARS-CoV-2 Infections Among Skilled Nursing Facility Residents and Staff Members — Chicago, Illinois, December 2020–March 2021

Richard A. Teran, PhD^{1,2*}; Kelly A. Walblay, MPH^{1,2*}; Elizabeth L. Shane, MPH^{1,2*}; Shannon Xydys^{1,2*}; Stephanie Gretsche, MPH^{1,2*}; Alexandra Gagner, MPH^{1,2*}; Usha Samala, MPH^{1,2*}; Hyerese Choi^{1,2*}; Christy Zelinski, MPH^{1,2*}; Stephanie R. Black, MD^{1,2*}

On April 21, 2021, this report was posted as an MMWR Early Release on the MMWR website (<https://www.cdc.gov/mmwr>).

Early studies suggest that COVID-19 vaccines protect against severe illness (1); however, postvaccination SARS-CoV-2 infections (i.e., breakthrough infections) can occur because COVID-19 vaccines do not offer 100% protection (2,3). Data evaluating the occurrence of breakthrough infections and impact of vaccination in decreasing transmission in congregate settings are limited. Skilled nursing facility (SNF) residents and staff members have been disproportionately affected by SARS-CoV-2, the virus that causes COVID-19 (4,5), and were prioritized for COVID-19 vaccination (6,7). Starting December 28, 2020, all 78 Chicago-based SNFs began COVID-19 vaccination clinics over several weeks through the federal Pharmacy Partnership for Long-Term Care Program (PPP).¹ In February 2021, through routine screening, the Chicago Department of Public Health (CDPH) identified a SARS-CoV-2 infection in a SNF resident >14 days after receipt of the second dose of a two-dose COVID-19 vaccination series. SARS-CoV-2 cases, vaccination status, and possible vaccine breakthrough infections were identified by matching facility reports with state case and vaccination registries. Among 627 persons with SARS-CoV-2 infection across 75 SNFs since vaccination clinics began, 22 SARS-CoV-2

test results from nucleic acid amplification tests (NAATs, such as reverse transcription-polymerase chain reaction [RT-PCR]) and antigen tests reported to the Illinois' National Electronic Disease Surveillance System with facility-reported line lists of SARS-CoV-2 test results from routine screening testing.⁸ In February 2021, CDPH began matching records to Illinois' Comprehensive Automated Immunization Registry Exchange to identify breakthrough infections. After identifying SARS-CoV-2 infection in a SNF resident 16 days after receipt of a second vaccine dose, CDPH initiated an investigation to quantify breakthrough infections across all facilities, evaluate symptoms and clinical outcomes, and assess potential secondary transmission. Vaccine effectiveness was not evaluated.

A facility's investigation period started on its first vaccination clinic date and ended March 31, 2021.⁴ A confirmed case of SARS-CoV-2 infection was defined as a positive SARS-CoV-2 NAAT or antigen test result from a respiratory specimen collected from a resident or staff member during the investigation period. Consistent with CDC guidance, a vaccine breakthrough infection in a resident or staff member was defined as a receipt of a positive SARS-CoV-2 NAAT or antigen test result from a respiratory specimen collected ≥14 days after completing the two-dose COVID-19 vaccination series.⁴ Infection



5. Teran RA, Walblay KA, Shane EL, Xydys S, Gretsche S, Gagner A, Samala U, et al. Postvaccination SARS-CoV-2 Infections Among Skilled Nursing Facility Residents and Staff Members - Chicago, Illinois, December 2020-March 2021. MMWR Morb Mortal Wkly Rep. 2021 Apr 30;70(17):632-638. doi: 10.15585/mmwr.mm7017e1. PMID: 33914721; PMCID: PMC8084122.

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Breakthrough COVID-19 Infections

• Findings:

- Twenty-two possible breakthrough SARS-CoV-2 infections occurred ≥ 14 days after full vaccination
- Two thirds were asymptomatic. A minority experienced mild to moderate COVID-19–like symptoms; two COVID-19–related hospitalizations and one death occurred. No facility-associated secondary transmission

• Implications:

- SNFs should prioritize vaccination and follow recommended COVID-19 infection prevention and control practices, including following work restrictions, isolation, quarantine, testing of residents and staff members, and use of personal protective equipment.



5. Teran RA, Walblay KA, Shane EL, Xydis S, Gretsches S, Gagner A, Samala U, et al. MMWR Morb Mortal Wkly Rep. 2021 Apr 30;70(17):632-638. doi: 10.15585/mmwr.mm7017e1. PMID: 33914721; PMCID: PMC8084122.

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COVID-19 Vaccine Booster Shot

• Difference between a booster dose and an additional dose

- A “booster dose” is for individuals who built up sufficient immunity initially but experienced a decrease in protection over time
- An “additional dose” is recommended for individuals who completed initial vaccination but did not build up sufficient immunity
 - Currently, an additional third dose is recommended to be given at least 28 days after completing a two-dose mRNA vaccine (Pfizer-BioNTech or Moderna), only for people with certain immunocompromised conditions



6. U.S. CDC. COVID-19 Booster Shot. Last updated 01 Sep 2021. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>

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CDC Guidance on COVID-19 Vaccine Booster

- **Current booster dose recommendation**
 - The CDC's Advisory Committee on Immunization Practices (ACIP) has recommended a booster dose to be administered at least six months after completion of the 2-dose Pfizer vaccine for the following groups:
 - **SHOULD**: People ≥ 65 y.o.; LTCF residents
 - **SHOULD**: People 50-64 y.o. w/ underlying conditions
 - **MAY**: 18-49 y.o. with underlying health conditions
 - **MAY**: 18-64 y.o. whose occupations/settings would put them at higher risk of infection, such as healthcare workers



7. U.S. CDC. CDC Newsroom: CDC statement on ACIP booster recommendations. Press Release. 24 Sep 2021. Available from: <https://www.cdc.gov/media/releases/2021/r0924-booster-recommendations.html>

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COVID-19 Vaccine Booster Shot

Effectiveness of COVID-19 mRNA Vaccines in Preventing COVID-19 Infection Before and During** Increased Prevalence of the Delta Variant*

	Pfizer-BioNTech	Moderna
General population, before Delta	95%	95.6%
Nursing home residents, before Delta	74.2%	74.7%
General population, during Delta	76%	86%
Nursing home residents, during Delta	52.4%	50.6%

* Before Delta variant refers to the time before the Delta variant was known to be in circulation (prior to May 10, 2021)
 ** During Delta variant prevalence refers to the time period where the Delta variant was documented as the predominant variant causing COVID-19 infection (on or after June 21, 2021)

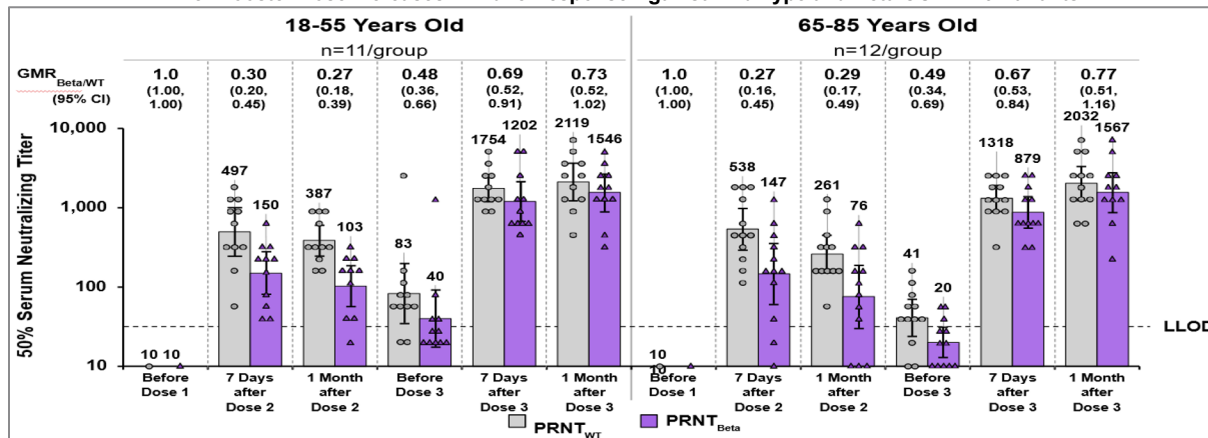


8. Comirnaty (Pfizer-BioNTech COVID-19 Vaccine, mRNA)[package insert on the internet]. 23 Aug 2021.
 9. Moderna COVID-19. Vaccine Fact Sheet for Healthcare Providers. Full EUA Prescribing Information. 27 Aug 2021.
 10. Nanduri S, Pillishvili T, Derado G, Soe MM, Dollard P, Wu H, et al. MMWR Morb Mortal Wkly Rep. 2021 Aug 27;70(34):1163-1166. doi: 10.15585/mmwr.mm7034e3. PMID: 34437519; PMCID: PMC8389386.
 11. Puranik A, Lenehan PJ, Silvert E, Niesen MJ, Corchado-Garcia J, O'Horo JC, et al. Comparison of two highly-effective mRNA vaccines for COVID-19 during periods of Alpha and Delta variant prevalence. medRxiv. 21 Aug 2021. doi: <https://doi.org/10.1101/2021.08.06.21261707>.

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COVID-19 Vaccine Booster Shot

Pfizer Booster Dose Increases Immune Response Against Wild Type and Beta COVID-19 Variants



Abbreviations: GMR = geometric mean ratio, LLOD = lower limit of detection, PRNT = plaque reduction neutralization test, and WT = wild type

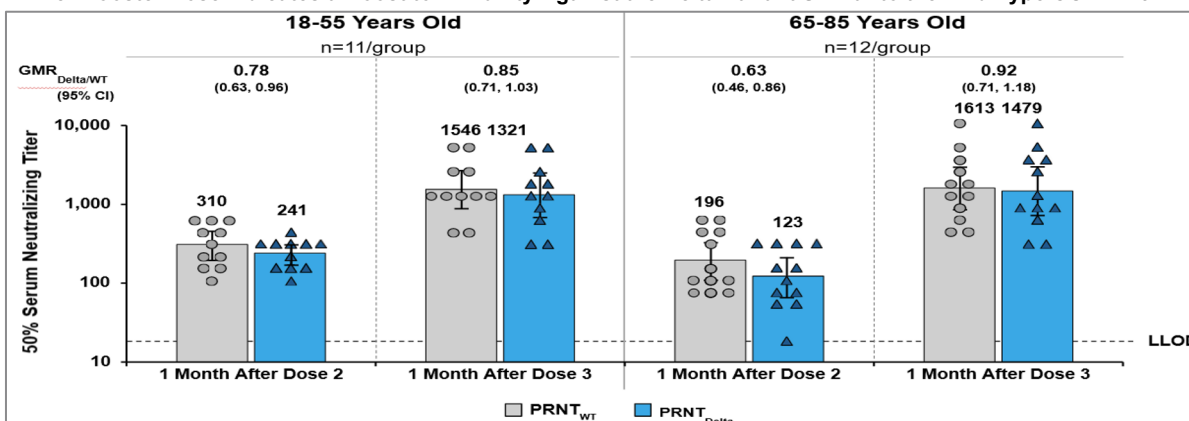


12. Gruber WC. BNT162b2 [COMIRNATY® (COVID-19 Vaccine, mRNA)] Booster (Third) Dose. Presentation. Pfizer Inc. 22 Sept 2021. Available from: <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-09-22/02-COVID-Gruber-508.pdf>

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COVID-19 Vaccine Booster Shot

Pfizer Booster Dose Indicates a Boost to Immunity Against the Delta Variant Similar to the Wild Type COVID-19



Abbreviations: GMR = geometric mean ratio, LLOD = lower limit of detection, PRNT = plaque reduction neutralization test, and WT = wild type

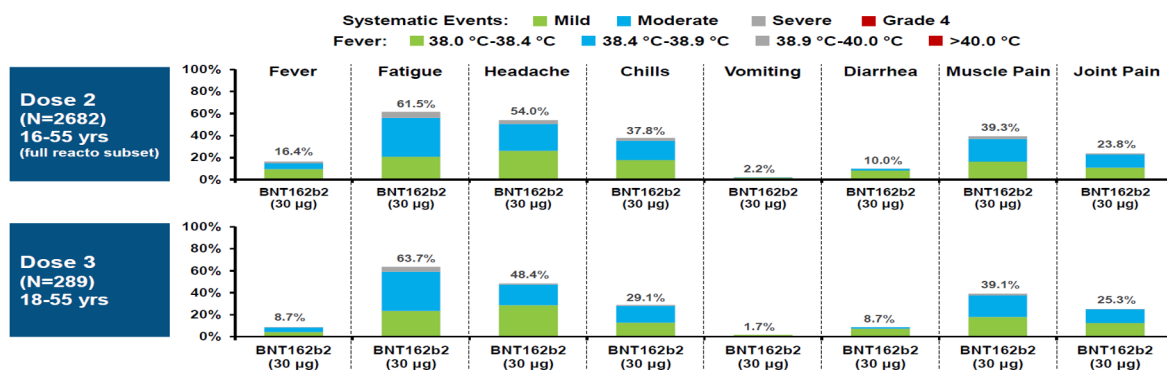


12. Gruber WC. BNT162b2 [COMIRNATY® (COVID-19 Vaccine, mRNA)] Booster (Third) Dose. Presentation. Pfizer Inc. 22 Sept 2021. Available from: <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-09-22/02-COVID-Gruber-508.pdf>

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COVID-19 Vaccine Booster Shot

- **How do the side effects of the booster dose compare to the second dose of Pfizer/BioNTech?** The occurrence of side effects from the booster are generally similar



Fatigue, headache, chills, muscle pain, joint pain severity definition: Mild=no interference; Moderate=some interference; Severe=prevents daily activity; Grade 4=ER visit or hospitalization
 Vomiting severity definition: Mild=1-2 times in 24h; Moderate=>2 times in 24h; Severe=Requires IV hydration; Grade 4=ER visit or hospitalization
 Diarrhea severity definition: Mild=2-3 times in 24h; Moderate=4-5 times in 24h; Severe=6 or more times in 24h; Grade 4=ER visit or hospitalization



12. Gruber WC. BNT162b2 [COMIRNATY® (COVID-19 Vaccine, mRNA)] Booster (Third) Dose. Presentation. Pfizer Inc. 22 Sept 2021. Available from: <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-09-22/02-COVID-Gruber-508.pdf>

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COVID-19 Vaccine Booster Shot

- **Should I get a booster dose if I received the Moderna or J&J/Janssen COVID-19 vaccine?**
 - **Booster doses have not been authorized for people who have received prior COVID-19 vaccination with Moderna or Janssen**
 - The current situation is dynamic and additional recommendations may be made in the future regarding booster doses for Moderna and/or J&J/Janssen
 - Getting a Pfizer vaccine as a booster is not recommended for individuals who completed the primary COVID-19 vaccine series with Moderna or J&J/Janssen



6. U.S. CDC. COVID-19 Booster Shot. Last updated 01 Sep 2021. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>

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Country-by-Country Guide to Coronavirus Vaccine Booster Plans

- Countries currently offering booster doses to anyone who wants one:
 - Hungary
- Some of the countries currently recommending booster doses only as a priority for one or more at-risk groups (elderly, chronic conditions, immunocompromised, healthcare worker):
 - Ireland
 - Israel
 - Serbia
 - Sweden



13. Furlong A, Deutsch J. A country-by-country guide to coronavirus vaccine booster plans. Politico. 20 Aug 2021. Available from: <https://www.politico.eu/article/vaccine-booster-coronavirus-covid-19-europe-delta-variant-who/>

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COVID-19 Vaccine Strategies for LTCFs

- Booster doses for LTCF residents can help reduce COVID-19 infections, but effectiveness also depends on COVID-19 vaccination coverage among LTCF workers who have more interactions with people outside of LTCFs
- *Encourage residents who completed the primary series of the Pfizer/BioNTech vaccine to get the booster dose when eligible (at least 6 months after the second Pfizer dose)*
- Encourage staff who have not received any of the available COVID-19 vaccines to get vaccinated
- Community transmission is a key contributor to cases in LTCF, so encourage visitors, friends, and family to get vaccinated



14. Slayton RB. Modeling the potential impact of vaccination strategies for nursing home residents and staff. CDC Epidemiology Taskforce and Modeling Team. 22 Sep 2021. Available from: <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-09-22/05-COVID-Slayton-508.pdf>

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COVID-19 Vaccine Strategies for LTCFs

- Giving multiple vaccines at the same visit is recommended
 - No current data has indicated that receiving an additional vaccine at the same visit as a COVID-19 vaccine would cause any adverse effects
 - For example, it would be okay to give an eligible individual a COVID-19 vaccine and an influenza vaccine at the same visit
- Delaying a vaccine means delaying protection and risks of infection and outbreaks at a LTCF



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Mandatory COVID-19 Vaccination in SNFs

- **California's COVID-19 vaccine mandate**
 - By September 30, 2021:
 - All workers who provide services or work in SNF's must have had their first dose of a one-dose regimen (J&J/Janssen) or their second dose of a two-dose regimen (Pfizer/BioNTech, Moderna)
 - **LTCF workers filing for exemption based on Religious Beliefs or Qualifying Medical Reasons must test for COVID-19 twice weekly**
- Additional information regarding LTCF vaccine and immunization recommendations can be found on the CDC website:

<https://www.cdc.gov/vaccines/covid-19/toolkits/long-term-care/faqs.html>



15. California Department of Public Health. State Public Health Officer Order of August 5, 2021. Available from: <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Order-of-the-State-Public-Health-Officer-Health-Care-Worker-Vaccine-Requirement.aspx>

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2. United States Food and Drug Administration. Influenza Vaccine for the 2021-2022 Season. 2021 Sep. Available from: <https://www.fda.gov/vaccines-blood-biologics/lot-release/influenza-vaccine-2021-2022-season>
3. Wang X, Kulkarni D, Dozier M, Hartnup K, Paget J, Campbell H, Nair H; Usher Network for COVID-19 Evidence Reviews (UNCOVER) group. Influenza vaccination strategies for 2020-21 in the context of COVID-19. J Glob Health. 2020 Dec;10(2):021102. doi: 10.7189/jogh.10.021102. PMID: 33312512; PMCID: PMC7719353.
4. CDC, NHSN. Nursing home data dashboard. 2021 Sep. Available from: <https://www.cdc.gov/nhsn/covid19/ltc-report-overview.html>
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6. U.S. CDC. COVID-19 Booster Shot. Last updated 01 Sep 2021. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>
7. U.S. CDC. CDC Newsroom: CDC statement on ACIP booster recommendations. Press Release. 24 Sep 2021. Available from: <https://www.cdc.gov/media/releases/2021/p0924-booster-recommendations.html>



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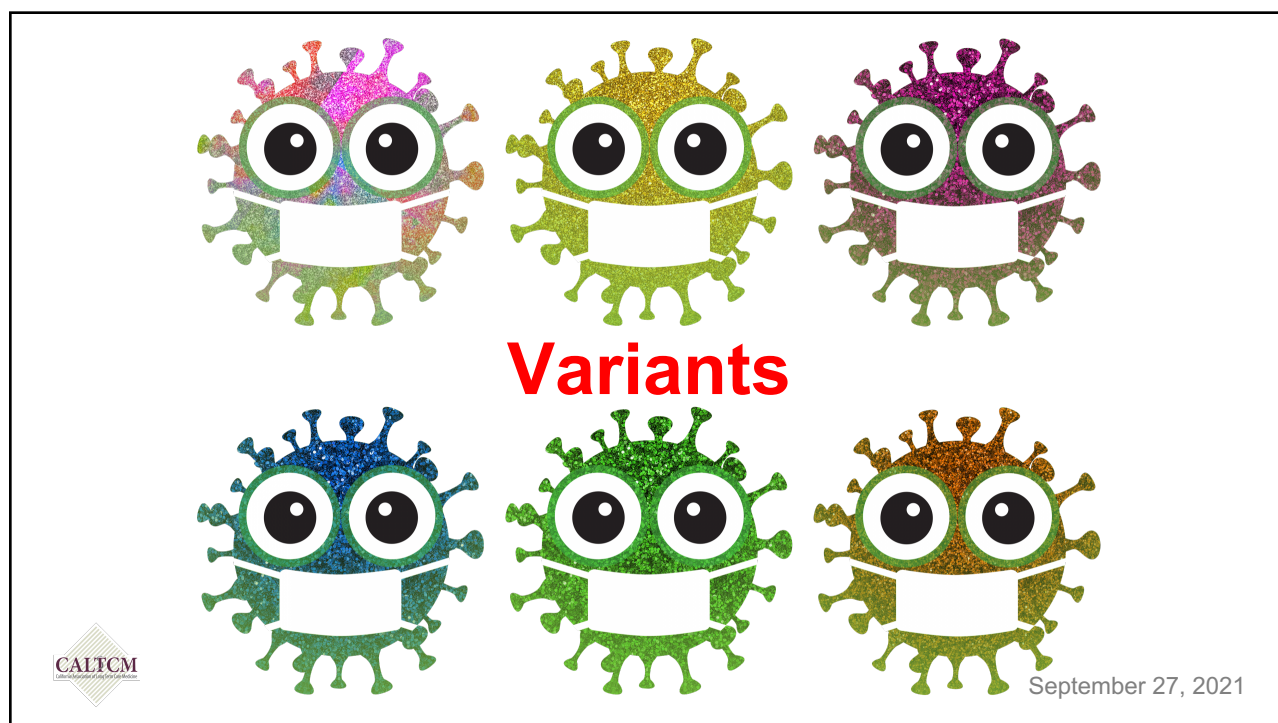
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8. Comirnaty (Pfizer-BioNTech COVID-19 Vaccine, mRNA)[package insert on the internet]. 23 Aug 2021.
9. Moderna COVID-19. Vaccine Fact Sheet for Healthcare Providers. Full EUA Prescribing Information. 27 Aug 2021.
10. Nanduri S, Pilishvili T, Derado G, Soe MM, Dollard P, Wu H, et al. 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, March 1-August 1, 2021. MMWR Morb Mortal Wkly Rep. 2021 Aug 27;70(34):1163-1166. doi: 10.15585/mmwr.mm7034e3. PMID: 34437519; PMCID: PMC8389386.
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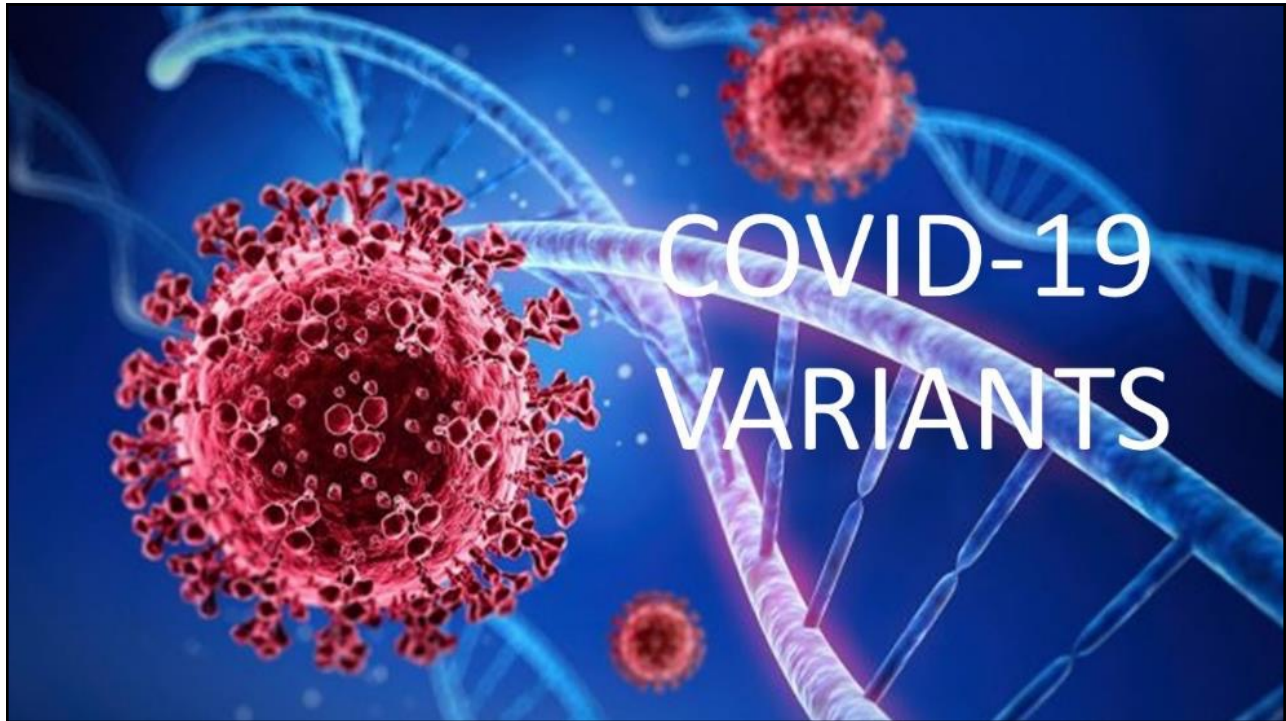
Topics for Discussion

- Variants
- Breakthrough infections
- Update on monoclonal antibodies
- Upcoming viral respiratory season: More of the same?



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Variants

- Main characteristic of RNA viruses such as SARS-CoV-2 and influenza is that they constantly mutate
- A mutation occurs when there is an error in the copying process (genetic mistake) after the genetic material enters the cell and result in infection
- Generally, mutations are miniscule; there are no significant changes in the virus or they make the virus weaker
- Occasionally, mutations can result in enhancing reproduction and infectivity – multiple mutations accumulate over time = new variant



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Classification of COVID-19 Variants

- **Variant of High Consequence (VOHC):** Has clear evidence that prevention measures or medical countermeasures (MCMs) have significantly reduced effectiveness relative to previously circulating variants.
- **Variant of Concern (VOC):** There is evidence of an increase in transmissibility, more severe disease (e.g., increased hospitalizations or deaths), **significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures.**
- **Variant of Interest (VOI):** Has specific genetic markers that have been associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.
- **Variants Being Monitored (VBM):** CDC monitors all variants circulating in the United States. Data indicating a potential or clear impact associated with more severe disease or increased transmission but are no longer detected or are circulating at very low levels in the US, and as such, do not pose a significant and imminent risk to public health in the US.



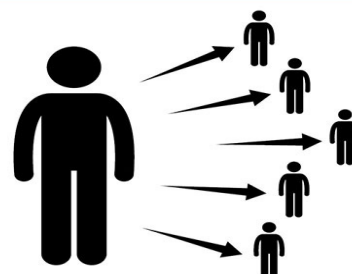
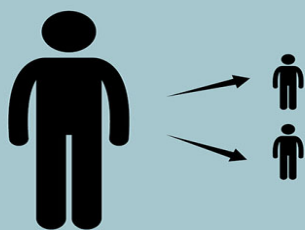
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The Delta variant is more contagious than previous strains—it may cause more than 2x as many infections

ORIGINAL COVID-19 STRAIN

DELTA VARIANT



Vaccines protect you from hospitalization, severe infections, and death



cdc.gov/coronavirus

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COVID-19 Variants

Known Variant Cases* Among San Diego County Residents

	B.1.1.7		P.1		B.1.617.2	
Location First Detected	U.K.		Brazil		India	
WHO Label	Alpha		Gamma		Delta	
Total Confirmed Cases	2,697		498		3,552	
Onset Illness Date Range	7/8/20 – 8/3/21		9/12/20-8/13/21		4/5/21-9/7/21	
Hospitalizations	52	1.9%	10	2.0%	93	2.6%
Deaths	5	0.2%	0	0.0%	26	0.7%
Age						
Median Age (Years)	31		28		33	
Age Range (Years)	0-93		0-91		0-99	
Sex						
Female	1,367	50.9%	237	47.8%	1,784	50.7%
Male	1,320	49.1%	259	52.2%	1,734	49.3%

*Confirmed cases are based on whole genome sequencing (WGS) results, which are not available until approximately 2-4 weeks after initial testing. These results do not represent all variant cases in San Diego County. Not all confirmed cases are sequenced and not all sequencing results are immediately available to Public Health Services. Variants of Concern with case counts <10 are not included in this table. Currently, 5 cases of B.1.351/Beta (first detected in South Africa) have been reported.
Source: San Diego County Communicable Disease Registry. For more information, see the [Summary of Variant Cases](#) report. Data through 9/21/2021. Updated 9/22/2021.



Variants of Interest (VOI) are not included in the above table:

VOI	B.1.427	B.1.429	B.1.525	B.1.526	B.1.617.1	P.2
Location First Detected	California	California	U.K./Nigeria	New York	India	Brazil
WHO Label	Epsilon	Epsilon	Eta	Iota	Kappa	Zeta

Delta sub-lineages (AY1-25):
a cause for concern?

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COVID-19 Variants

“Mu” variant (B.1.621)

- Designated by The World Health Organization (WHO) as a “variants of interest” on August 30, 2021
- Preliminary evidence it can potentially evade and vaccine antibodies
- First identified in Colombia in January and now makes up 39% of all cases there
- 1700 cases in US; CA: 268; Los Angeles:167 cases, a few identified in San Diego

C.1.2 from South Africa

- Identified in May with several concerning mutations.
- To date, WHO has not designated this variant as a variant of interest or of concern
- 2% in South Africa, and globally 150 (last week 145) cases. 1 in US (Michigan).

R1 variant

- Originated in Japan; as of September 21, R.1 has now infected more than 10,567 people around the world and has been detected in the US in 47 states.
- Maryland was found to have the highest number of cases, with 399 cases being detected since it was first found in the country.



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COVID-19 Outbreak Associated with a SARS-CoV-2 R.1 Lineage Variant in a Skilled Nursing Facility After Vaccination Program — Kentucky, March 2021

Weekly / April 30, 2021 / 70(17);639-643



Summary

What is already known about this topic?

COVID-19 vaccines have demonstrated high efficacy in clinical trials. Limited data are available on effectiveness in skilled nursing facilities (SNFs) and against emerging variants.

What is added by this report?

In a COVID-19 outbreak at a Kentucky SNF involving a newly introduced variant to the region, unvaccinated residents and health care personnel (HCP) had 3.0 and 4.1 times the risk of infection as did vaccinated residents and HCP. Vaccine was 86.5% protective against symptomatic illness among residents and 87.1% protective among HCP.

What are the implications for public health practice?

Vaccination of SNF residents and HCP is essential to reduce the risk for symptomatic COVID-19, as is continued focus on infection prevention and control practices.

Summary:

- Outbreak involved 46 residents and healthcare workers
- Highly vaccinated group of residents 90.4%; introduced by unvaccinated **SYMPTOMATIC** healthcare worker
- Although vaccination was associated with decreased likelihood of infection and symptomatic illness, 25.4% of vaccinated residents and 7.1% of vaccinated HCP were infected, supporting concerns about potential reduced protective immunity to R.1.
- Mutation demonstrates:
 - Evidence of increasing virus transmissibility
 - Evidence of reduced neutralization by convalescent and postvaccination sera
 - Might reduce the effectiveness of neutralizing antibodies
- In addition, four possible reinfections were identified, providing some evidence of limited or waning natural immunity to this variant.



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Monitoring Incidence of COVID-19 Cases, Hospitalizations, and Deaths, by Vaccination Status — 13 U.S. Jurisdictions, April 4–July 17, 2021

Weekly / September 17, 2021 / 70(37);1284–1290

- During April 4–July 17, 92% COVID-19 cases, 92% hospitalizations, and 91% COVID-19–associated deaths were reported among persons not fully vaccinated
- 8% of cases, 8% hospitalizations, and 9% deaths were reported among fully vaccinated persons
- The weekly prevalence of the SARS-CoV-2 Delta variant increased from **<1% to 90%** during April 4–July 17.
- During April 4–June 19, fully vaccinated persons accounted for 5% of cases, 7% of hospitalizations, and 8% of deaths overall; these percentages were higher during June 20–July 17 (18%, 14%, and 16%, respectively).

Summary

What is already known about this topic?

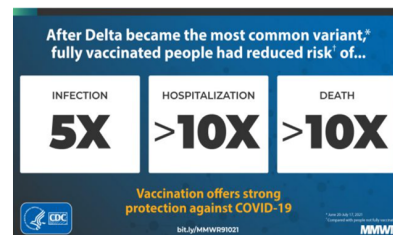
The incidence of SARS-CoV-2 infection, hospitalization, and death is higher in unvaccinated than vaccinated persons, and the incidence rate ratios are related to vaccine effectiveness.

What is added by this report?

Across 13 U.S. jurisdictions, incidence rate ratios for hospitalization and death changed relatively little after the SARS-CoV-2 B.1.617.2 (Delta) variant reached predominance, suggesting high, continued vaccine effectiveness against severe COVID-19. Case IRRs decreased, suggesting reduced vaccine effectiveness for prevention of SARS-CoV-2 infections.

What are the implications for public health practice?

Getting vaccinated protects against severe illness from COVID-19, including the Delta variant. Monitoring COVID-19 incidence by vaccination status might provide early signals of potential changes in vaccine effectiveness that can be confirmed through robust controlled studies.



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Skilled Nursing Facilities Residents, mRNA Vaccinations and the Delta Variant



Summary

What is already known about this topic?

Early observational studies among nursing home residents showed mRNA vaccines to be 53% to 92% effective against SARS-CoV-2 infection.

What is added by this report?

Two doses of mRNA vaccines were **74.7%** effective against infection among nursing home residents early in the vaccination program (March–May 2021). During June–July 2021, when B.1.617.2 (Delta) variant circulation predominated, effectiveness declined significantly to **53.1%**.

What are the implications for public health practice?

Multicomponent COVID-19 prevention strategies, including vaccination of nursing home staff members, residents, and visitors, are critical. An additional dose of COVID-19 vaccine might be considered for nursing home and long-term care facility residents to optimize a protective immune response.



Nanduri S, Pilishvili T, Derado G, et al. 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. MMWR Morb Mortal Wkly Rep 2021;70:1163–1166. DOI: <http://dx.doi.org/10.15585/mmwr.mm7024a3externalicon>.

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CORRESPONDENCE

Resurgence of SARS-CoV-2 Infection in a Highly Vaccinated Health System Workforce

NEJMDOI: 10.1056/NEJMc2112981

Table 1. Symptomatic SARS-CoV-2 Infection and mRNA Vaccine Effectiveness among UCSDH Health Workers, March through July 2021.*

	March	April	May	June	July
UCSDH workforce — no. of persons	18,964	18,992	19,000	19,035	19,016
Vaccination status — no. of persons					
Fully vaccinated†	14,470	15,510	16,157	16,426	16,492
mRNA-1273 (Moderna)	6,608	7,005	7,340	7,451	7,464
BNT162b2 (Pfizer–BioNTech)	7,862	8,505	8,817	8,975	9,028
Unvaccinated	3,230	2,509	2,187	2,059	1,895
Percentage of workers fully vaccinated	76.3	81.7	85.0	86.3	86.7
Symptomatic Covid-19					
Fully vaccinated workers	3	4	3	5	94
Unvaccinated workers	11	17	10	10	31
Percentage of cases in fully vaccinated workers	21.4	19.0	23.1	33.3	75.2
Attack rate per 1000 (95% CI)					
Fully vaccinated workers	0.21 (0.21–0.47)	0.26 (0.26–0.50)	0.19 (0.21–0.40)	0.30 (0.31–0.53)	5.7 (5.4–6.2)
Unvaccinated workers	3.4 (2.1–5.9)	6.8 (4.5–10.6)	4.6 (2.6–8.2)	4.9 (2.9–8.7)	16.4 (11.8–22.9)
Vaccine effectiveness — % (95% CI)	93.9 (78.2–97.9)	96.2 (88.7–98.3)	95.9 (85.3–98.9)	94.3 (83.7–98.0)	65.5 (48.9–76.9)



* UCSDH denotes University of California San Diego Health.

† Data are the total number of workers who had received two doses of an mRNA vaccine as of the last day of the month.

Comment: Importance of non-pharmacologic strategies for prevention of COVID-19 -

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Summary: COVID-19 Variants and Breakthrough Infections

- The delta variant is associated with increased infectivity, an increase in breakthrough infections over time, and immune escape: reduction of neutralization of antibodies following previous infection or vaccination
- While breakthrough infections are higher with the delta variant, infections in fully vaccinated persons are either asymptomatic or mildly symptomatic and have lower risks of hospitalization and death as compared to those not fully vaccinated
- Non-pharmacologic strategies in preventing the spread of COVID-19 mitigate transmission



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COVID-19 Monoclonal Antibodies

Update

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Monoclonal Antibody and Demand

- Treatment of mild to moderate COVID-19 infection in non-hospitalized patients confers a 70% reduction in hospitalization and death
- The demand for treatment and post exposure prophylaxis has exhausted the current available supply – public perception
- All doses will be distributed to State Health Departments for allocation to local health departments; no more distribution to facilities or pharmacies
- Three preparations are available:
 - Regen COV casirivimab/imdevimab
 - Lilly product: bamlanivimab/etesevimab
 - Sotrovimab (\$\$)
- Prioritization is necessary



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Prioritization

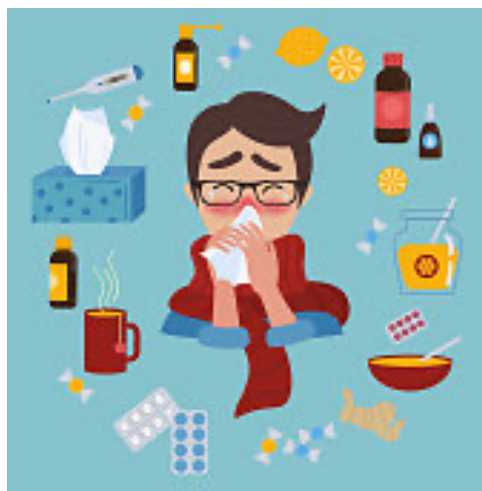
- Prioritizing the treatment of COVID-19 over PEP of SARS-CoV-2 infection.
- Prioritizing the following groups over vaccinated individuals who are expected to have mounted an adequate immune response:
 - Unvaccinated or incompletely vaccinated individuals who are at high risk of progressing to severe COVID-19
 - Vaccinated individuals who are not expected to mount an adequate immune response (e.g., immunocompromised individuals).



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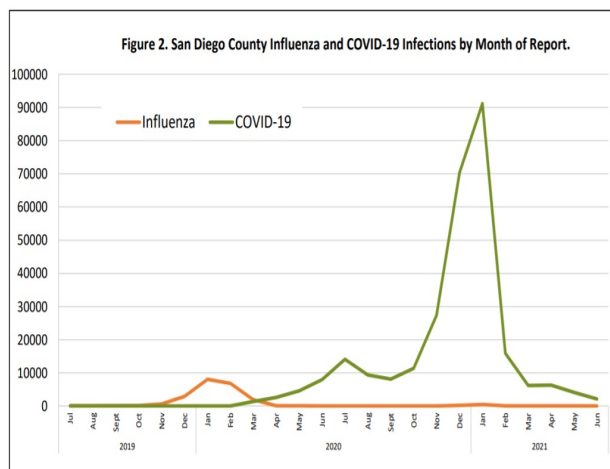
Viral Respiratory Season: Influenza and Respiratory Syncytial Virus (RSV)



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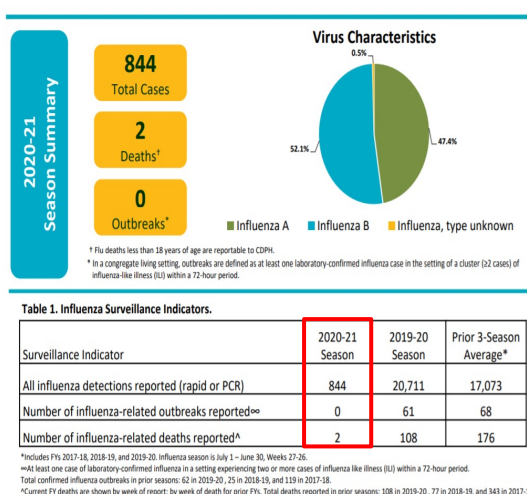
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Influenza 2020-2021



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2020-2021 Influenza Season: Observations

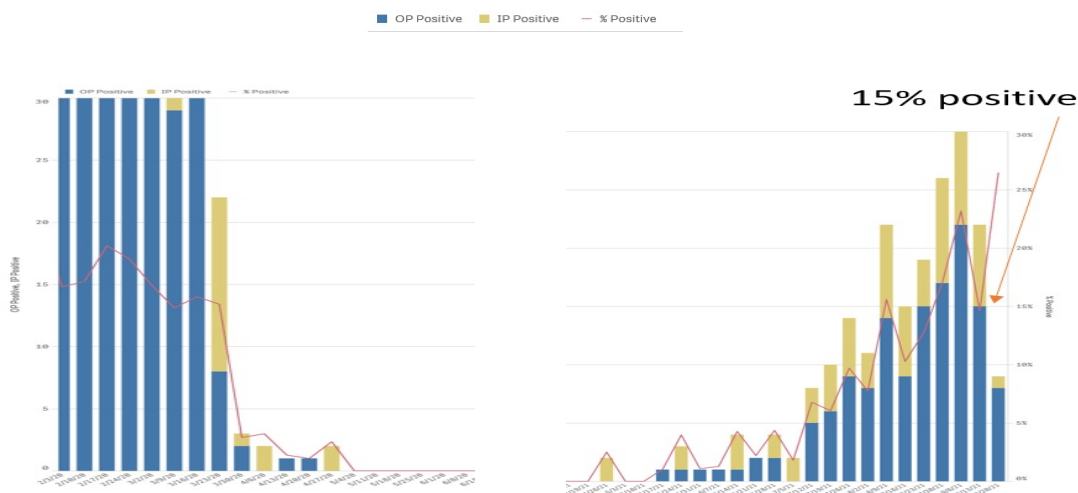
- Lowest influenza activity in the last 10 years
- Influenza A and Influenza B each accounted for about half the reports.
- Persons ages ≥ 65 and persons < 18 up a **smaller proportion** of influenza cases than in the past four seasons, with persons ages **18-64 years** constituting 86% of cases.
- There were 142 cases of influenza A/B and SARS-CoV-2 co-infections, representing **17% of all influenza cases**.
- The two deaths were in persons 65 years and older.
 - Only one was known to have received the 2020-21 influenza vaccine
 - Both had underlying medical conditions.
 - Both persons were co-infected with SARS-CoV-2.



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Respiratory Syncytial Virus (RSV) at Rady's Children



Respiratory Syncytial Virus (RSV)



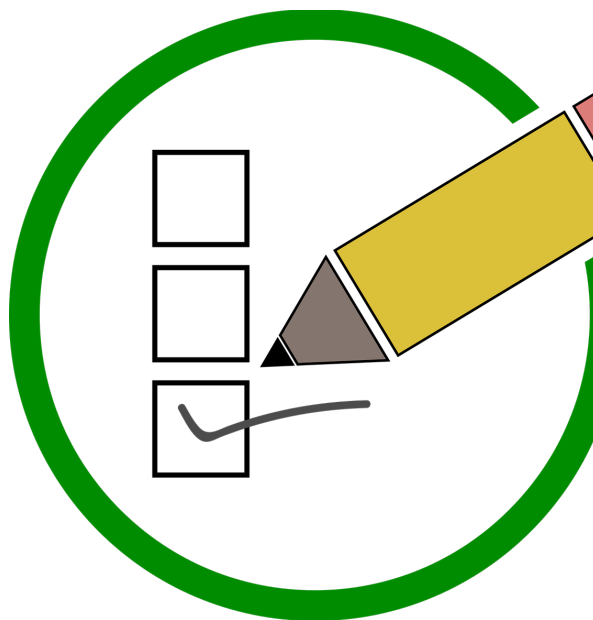
- Each year, it is estimated that more than 177,000 older adults are hospitalized with 14,000 (8%) death.
- Adults at highest risk for severe RSV infection include:
 - Older adults, especially those 65 years and older
 - Adults with chronic heart or lung disease
 - Adults with weakened immune systems
- Most people who become infected with RSV are contagious for 3-8 days
- Diagnosis
 - Multiplex assays (PCR)
 - Respiratory virus panel (PCR) that includes all respiratory viruses
 - Culture is needed to type the influenza strain (e.g., H1N2, H3N2)
 - Promote influenza and pneumococcal vaccinations - CMS
- **HCWs: Do not work if sick!**



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Polls



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Barriers

Michael Moore



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