

It is hard to believe but next weekend is July 4th!

In today's Briefing under COVID-19 News I summarize the ACIP findings on myocarditis/pericarditis associated with the mRNA vaccines. Let me be clear: **Covid-19 has now become a vaccine preventable disease**. Next is the experience in Israel with the delta variant. Last is an update of the increasing number of healthcare organizations mandating Covid-19 vaccinations.

Under Journal Review in keeping with the theme of the delta variant, a pre-publication article documenting the replacement of the alpha variant with the delta variant in the US. As I point out, fully vaccinated people still have significant protection against severe disease and death even against the delta variant. Next a CDC report that many adults aged 18-39 years are still unsure about getting vaccinated and lag behind older age groups. The next article is a well-done article from colleagues in Boston on transmission from patients with undiagnosed Covid-19 to roommates. This article was provided by Chanu Rhee. Last is an article on the effect of vaccination on household transmission.

Have a wonderful weekend

Ed

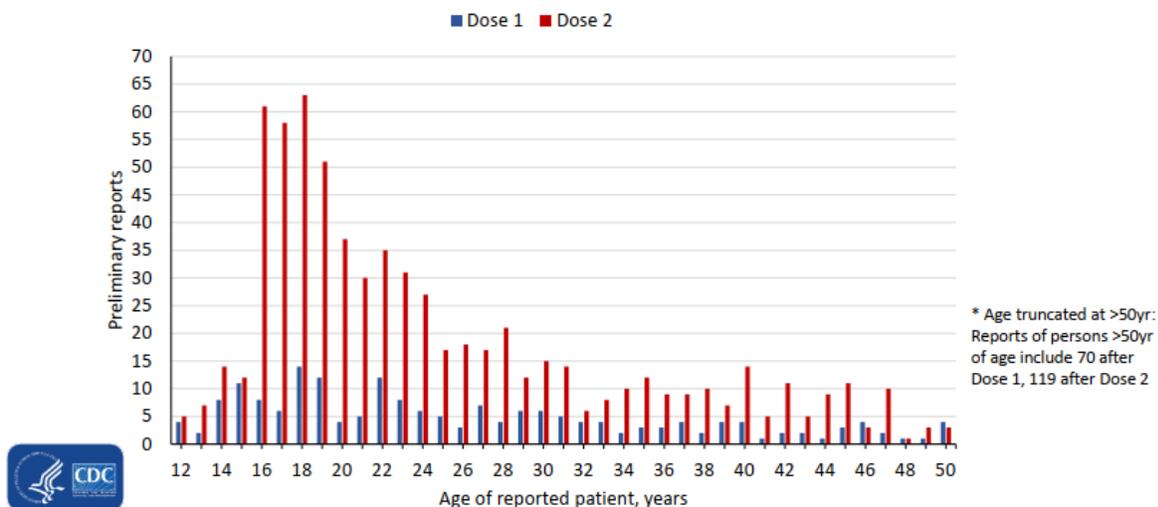
COVID-19 News

CDC ACIP Meeting: Likely Association Between mRNA Covid-19 Vaccines and Rare Myocarditis Cases June 23, 2021

CDC ACIP said Wednesday that there is a "likely association" between Pfizer and Moderna's mRNA Covid-19 vaccines and myocarditis in some younger individuals but noted that cases were rare and that most patients quickly felt better. The CDC and other health authorities still recommend Covid-19 vaccination for those age 12 and above, given the greater risk from Covid-19, which itself can cause myocarditis and other complications.

Around 1,200 cases of myocarditis and pericarditis following mRNA vaccines had been reported to a federal vaccine safety database as of June 11, according to a CDC presentation to the group. [12.6 cases/1 million doses] To date, over 300 million doses of mRNA vaccine have been administered in the U.S., according to the CDC. The cases have mostly been among male adolescents and young adults aged 16 and above, and myocarditis was more common after the second dose and often occurred within several days of vaccination. Most cases are mild and resolve quickly. ACIP's working group said it would continue to review data. The meeting ends today. They agreed that a warning about the potential risk should be added to the FDA's official fact sheets on the vaccines.

Preliminary reports of myocarditis/pericarditis to VAERS after mRNA COVID-19 vaccination by age and dose number* (as of Jun 11, 2021)



Comment: The benefits of vaccination far outweigh any risk, especially with the troubling Delta variant increasingly circulating, and more readily impacting younger people, the risks of being unvaccinated are far greater than any rare side effects from the vaccines. See below.

Israel Sees Highest COVID Daily Infections in Two Months as Delta Variant Spreads

Haaretz June 21, 2021

Israel yesterday reported 125 cases after seeing numbers plummet to the single digits earlier this month. The head of the country's health ministry said 70% of cases involve the Delta variant, and that half of those are children, and that one-third of those cases are vaccinated. The illnesses are stemming from several local outbreaks, including one involving staff at a school.

Comment: This is a growing trend around the world. In the US delta rates are increasing now ~20% as of June 19th. The Delta variant has spread to about 70 countries, including the U.K., where it now makes up more than 87% of Covid-19 cases and now 70% in Israel. In the US, the Delta variant is spreading fastest in counties with low vaccination rates. It is expected by mid-summer that the prevalence of the Delta variant will plateau in the U.S. at about 70% to 80% of Covid-19 cases. Delta is about 50% more transmissible than the current dominant U.S. alpha variant. The alpha variant was ~50% more transmissible than the original wild virus. The Delta variant may be associated with more severe disease. Full vaccination against Covid-19 still appears to offer significant protection against the Delta variant, according to data from Public Health England. Data published by Public Health England show the variant is primarily spreading among younger age groups, who have only recently been made eligible for vaccination, in a government drive to extend immunity before a full reopening now slated for July 19. Under 40s account for three-quarters of Delta cases, according to the data. Over 60s, around 90% of whom are fully vaccinated, make up only 4% of cases.

We have a long way to go in the US, but we will not meet President Biden's goal of vaccinating 70% of adults getting at least one dose by July 4th. However, the target has been met among older Americans, but 18- to 26-year-olds are not showing up for vaccination in as large of numbers as hoped. This may

pose a danger because many people around the world who have been infected by the Delta variant are young people. **Recent CDC data shows over 90% of deaths in the US now involved people who are unvaccinated.** As of this week, ~63% of all eligible American have had at least one dose and 53% are fully vaccinated. We may continue to see outbreaks in the fall and winter in under vaccinated communities. **Covid-19 has now become a vaccine preventable disease.** See articles below.

Hospitals, Health Systems Mandating Vaccines for Workers

Updates June 24, 2021

1. Mass General Brigham will require employees to be vaccinated against COVID-19. A deadline for the mandate will be determined after FDA approval.
2. BJC HealthCare will require employees to be fully vaccinated against COVID-19 beginning in the fall. Employees and those who work in BJC facilities must comply with the mandate by Sept. 15 or receive a medical or religious exception.
3. San Francisco will require personnel in high-risk settings such as skilled nursing facilities, acute care hospitals, homeless shelters, and jails to be vaccinated against COVID-19. The requirement takes effect once one of the vaccines being distributed in the U.S. receives full FDA approval.
4. University of California Health will require COVID-19 vaccines. Vaccinations will be mandatory for faculty, staff, academic appointees, and students accessing University of California campuses this fall.
5. New York-Presbyterian said all employees, physicians, students, clinical rotators, volunteers, and vendors must have received their first dose no later than Sept. 1, and, for two-dose vaccines, workers must complete the vaccination process on the prescribed timeline.
6. Community Health Network in Indianapolis is requiring employees to be fully vaccinated by Sept. 15 unless they receive exemptions for religious or medical reasons.
7. Hospitals in Washington, D.C. signed a districtwide consensus statement to mandate COVID-19 vaccinations for their workers. Each of the 14 hospitals will set their own vaccination deadline.
8. Maryland hospitals and health systems signed a statewide consensus statement to mandate COVID-19 vaccinations for their workers. Each organization will set their own vaccination deadline.
9. Indiana University Health in Indianapolis is requiring employees to be fully vaccinated by Sept. 1.
10. University of Louisville (Ky.) Health is requiring team members and providers, including residents, fellows, and rotating students, to be fully vaccinated by Sept. 1.
11. RWJ Barnabas Health in N.J., is requiring supervisors and employees ranked above them to be vaccinated no later than June 30 and said it plans to extend the mandate to all employees.
12. University of Pennsylvania Health System is making the vaccine mandatory for all employees and clinical staff by no later than Sept. 1. New hires must provide proof of at least one dose two weeks before beginning work.
13. Houston Methodist [was the first] rolled out its mandatory vaccination policy March 31. The deadline for vaccination has passed and some employees have been released for failure to comply. As the Briefing has reported, Houston Methodist was sued by some employees. The judge in Houston threw out their lawsuit, but this is being appealed.

Comment: Houston Methodist has started a clear trend as more and more healthcare systems, colleges, and businesses are now mandating vaccinations. I believe this will accelerate when the FDA grants full approval which may occur as early as this summer.

Journal Review

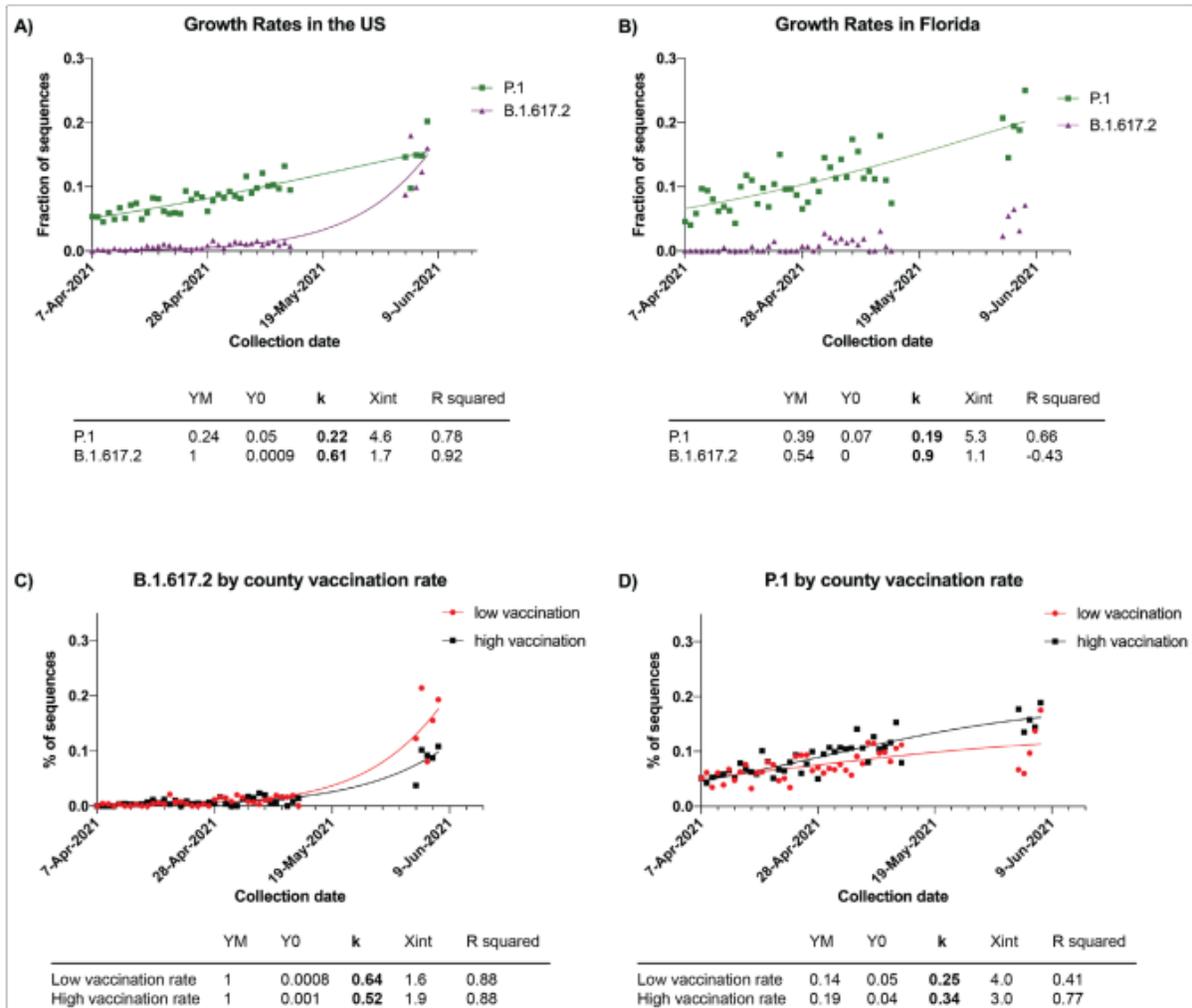
Rapid Displacement of SARS-CoV-2 Variant B.1.1.7 by B.1.617.2 and P.1 in the United States

medRxiv published online June 20, 2021

doi.org/10.1101/2021.06.20.21259195

The B.1.617.2 variant (Delta) is the predominant variant in India and in the United Kingdom and has been identified in 65 countries as of June 17, 2021. It has been shown to be ~50% more transmissible than the SARS-CoV-2 B.1.1.7 variant (Alpha). Moreover, a study by Public Health England showed that vaccine efficacy for AstraZeneca and Pfizer vaccines remained particularly good (>90%) against hospitalizations after two doses. However, vaccine efficacy was lower against B.1.617.2 compared to B.1.1.7 after one dose. In England, B.1.1.7 represented more than 90% of the SARS-CoV-2 sequences when B.1.617.2 was first identified in the country, and there were very few cases of P.1 (Gamma). In the United States, B.1.1.7 plateaued just above 70% when B.1.617.2 started to emerge, including an increasing amount of P.1. This study set out to analyze the impact of the introductions of B.1.617.2 and P.1 variants on the prevalence of B.1.1.7 in the United States, and to analyze the growth and transmissibility of B.1.617.2 and P.1 in the United States. To this end, they looked at the PCR testing results, and sequencing results of samples collected by the Helix laboratory across the United States since April 2021. The Helix COVID-19 Test is based on the Thermo Fisher TaqPath COVID-19 Combo Kit, which targets three SARS-CoV-2 viral regions (N gene, S gene, and ORF1ab). They relied on sequencing followed by the assignment of a Pango lineage.

They used viral sequence data from 19,987 Helix COVID-19 tests collected since April 2021 and 243,769 SGTF values from Helix COVID-19 tests collected since January 2021 to show the trends of different variants of concern in the US. The total percentage of positive COVID-19 tests attributed to B.1.1.7 in the United States fell from a peak of 70% in April down to 42% in just 6 weeks. They showed that most of the displacement of B.1.1.7 can be attributed to B.1.617.2 and P.1. Both variants of concern are growing in the United States and explain the rapid proportional decrease of the B.1.1.7 variant. Preliminary growth rates show that both B.1.617.2 and P.1 are growing faster than B.1.1.7, and that B.1.617.2 is growing faster than P.1 in the United States ($k=0.61$ vs. $k=0.22$). Our results are consistent with those from Public Health England, which found that compared to B.1.1.7, B.1.617.2 had a growth rate of 0.93 and P.1 had a growth rate of 0.34.



Comment: The expectation is that B.1.617.2 (Delta) will soon be the dominant variant in the United States. In some areas like the Midwest, it is already the dominant variant. However, questions remain whether it will entirely take over as it is doing in the UK, or whether it will plateau at a lower level like B.1.1.7 did in the US. One reason to argue that B.1.617.2 may not reach levels as high in the US compared to England is the more diverse sets of policies between US states with regard to vaccinations and other public health measures. With this in mind, they showed that B.1.617.2 is growing more rapidly in counties with lower vaccination rates especially among younger persons as has been seen in the UK. (see next article) It has been shown that fully vaccinated people still have significant protection against severe disease and death even against the delta variant.

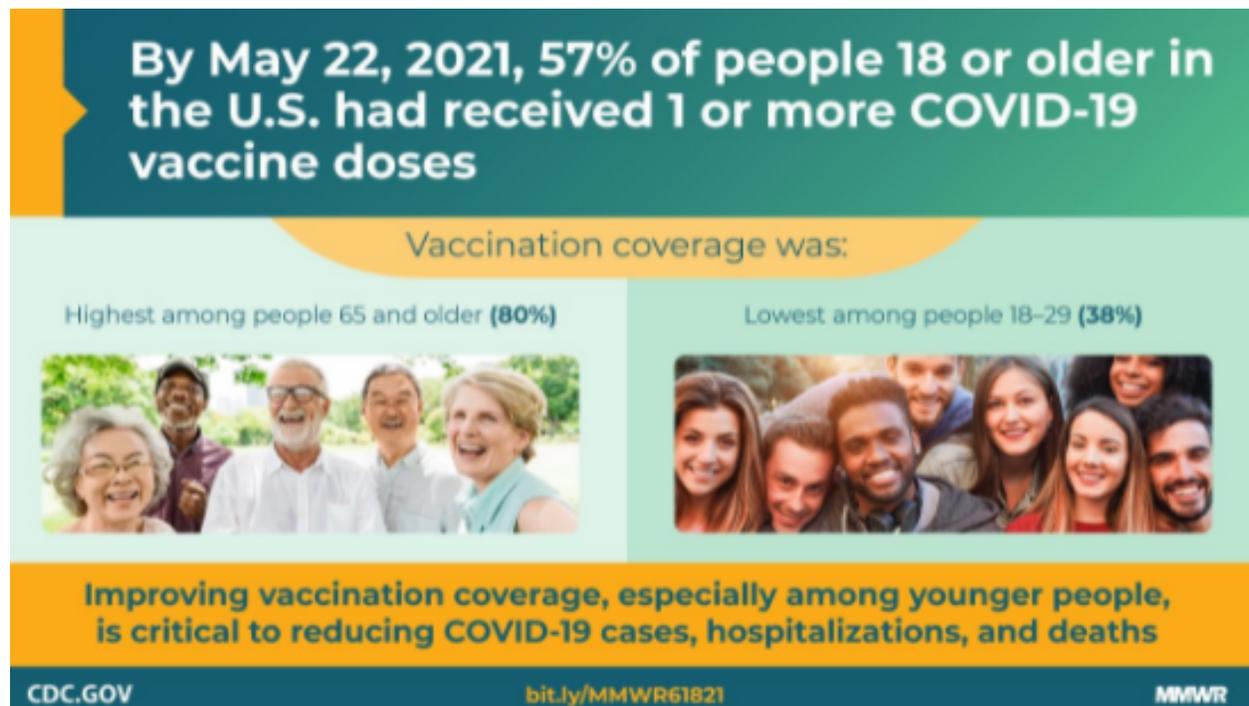
COVID-19 Vaccination Coverage and Intent Among Adults Aged 18-39 Years — United States, March-May 2021

MMWR June 21, 2021

During March-May 2021, CDC sponsored questions in two nationally representative, probability-based panel surveys that were administered to U.S. adults aged ≥ 18 years to assess COVID-19 vaccination status, intent, attitudes, and perceptions. Eight surveys were administered to 8,410 panelists (approximately 1,000 per panel) during March 5-May 2, 2021, with panel completion ranging from 20.3% to 60.1%. Because of similar sampling methods and characteristics of respondents, results were pooled

across surveys. Analysis was also conducted among the subset of adults aged 18-39 years (N = 2,726) to estimate vaccination coverage and intent by sociodemographic characteristics and to assess COVID-19 vaccine perceptions among intent groups.

Among 2,726 adults aged 18-39 years, 51.8% reported that they had been vaccinated or were intending to get vaccinated, including 34.0% who had already received a COVID-19 vaccine; 23.2% were probably going to get vaccinated or were unsure about getting vaccinated; and 24.9% reported that they probably or definitely would not get vaccinated. Compared with adults aged 35-39 years, a smaller proportion of adults aged 18-24 years reported having been vaccinated (28.4% versus 35.5%), and a larger proportion was unsure about getting vaccinated or was probably going to get vaccinated (28.3% versus 19.2%). Education and income were both associated with likelihood of vaccination and all levels of intent. Those with a bachelor's degree or higher were most likely to report being vaccinated or intending to get vaccinated (72.6%), including 51.8% who reported already having been vaccinated; these proportions decreased with decreasing educational level. Similarly, adults with the highest household incomes were most likely to report being vaccinated or intending to get vaccinated (64.2%), including 42.9% who were already vaccinated; these proportions also decreased with income. Reported COVID-19 vaccination coverage or definite intent to get vaccinated was lower among non-Hispanic Black adults (40.1%, with 25.4% vaccinated) than among non-Hispanic White adults (51.8%, with 35.0% vaccinated). A higher percentage of adults living outside metropolitan areas reported that they probably or would not get vaccinated (40.1%), compared with those within metropolitan areas (22.1%).



Comment: The findings in this report indicate that trust in COVID-19 vaccines, particularly in their safety and effectiveness, was an important factor in the decision to get vaccinated among adults aged 18-39 years, especially for those who were unsure about or probably planning on getting vaccinated. Compared with those who were probably or not planning to get vaccinated, this group was more concerned about getting COVID-19, indicating that information about vaccine safety and effectiveness might have influenced their decision to get vaccinated. This information might be a motivating factor if it

were to come from trusted sources, such as health authorities, primary physicians, and family and friends. In contrast, vaccine messages from employers, religious leaders, or social media might not be as effective. Adults aged 18-39 years who were unsure about getting vaccinated or probably going to get vaccinated reported that a desire to protect others and resume social activities were motivators to get vaccinated, suggesting that messages emphasizing that vaccination would allow them to resume social activities and encouraging vaccination for the greater good might be effective. Achieving high vaccination coverage among adults aged 18-39 years is critical to protect this population from COVID-19 and to reduce community transmission especially with new variants such as Delta. (See above)

The Risk of SARS-CoV-2 Transmission from Patients with Undiagnosed Covid-19 to Roommates in a Large Academic Medical Center

Clin Infect Dis published online June 18, 2021-article provided by Chanu Rhee
doi.org/10.1093/cid/ciab564

The investigators retrospectively analyzed all adult patients hospitalized, between September 1, 2020, and April 15, 2021. The hospital has 803 beds, 28% of which are in semi-private rooms with two beds placed 5 feet apart side-to-side, 7 feet apart mid-pillow to mid-pillow, and with a curtain in-between that is kept closed. During the study period, all patients were tested for SARS-CoV-2 by PCR on admission. Patients with symptoms consistent with Covid-19 were tested twice 12 hours apart and isolated in single rooms until the 2nd test returned negative; asymptomatic patients were tested once and managed with standard precautions while the test was pending. Beginning November 23rd, all inpatients were retested 72 hours after admission to identify infections incubating SARS-CoV-2 on arrival. Patients with known Covid-19 exposures were isolated in single rooms for 10-14 days.

They then identified all patients who tested positive for the first time while in a shared room. They excluded PCR-positive patients who were deemed non-infectious on the basis of serial high cycle thresholds (Ct) and/or prior history of SARS-CoV-2 infection. [based on prior publication OFID 2021; ofab194]. They considered roommates exposed if they shared a room for ≥ 15 minutes with an index patient during their infectious window, defined as 48 hours prior to symptom onset (or positive test in the absence of symptoms) until isolation. Exposed roommates were tested if they remained hospitalized; discharged patients were contacted by phone whenever possible and offered testing.

Among 38 exposed roommates, 31 had ≥ 1 documented test ≥ 3 days post-exposure and were included in the analysis. The median duration of exposure among these 31 patients was 18 hours (IQR 12-47 hours), and they were tested a median 2 times (range 1-4) during the 14-day postexposure period. 12/31 (39%) exposed roommates tested positive, translating into an infection incidence of 0.1% (12/11,290) among all patients admitted to shared rooms. Median time-to-positivity was 5 days post-exposure (range 2-10); 4/12 (33%) initially tested negative before testing positive. Only 1 index case and 2 roommates had been fully vaccinated at the time of exposure; one vaccinated roommate was infected by an unvaccinated index case. The median interval from hospital admission until positive test amongst infected roommates was 9.5 days (IQR 7.8-12). 10 exposed roommates tested positive after discharge (median 4.5 days post-discharge, IQR 2-7.75).

On univariate analysis, infected roommates were more likely to be female, non-white, exposed to patients with respiratory symptoms, and exposed to patients with Ct values ~ 21 . Exposure to aerosol-generating procedures was not significant. On multivariable analysis, only index patient Ct values ~ 21 remained significantly associated with transmission.

Comment: Almost 40% of patients that shared a hospital room with someone with occult SARS-CoV-2 infection became infected. The risk was highest for patients sharing rooms with individuals with very low Ct values. The high secondary attack rate for roommates is similar to transmission rates reported amongst household contacts. As the authors point out, “In many ways patients in shared rooms are similar to household members insofar as they spend prolonged periods together in enclosed spaces, often without masks.” Their findings may not be generalizable to hospitals with different infection control policies, room designs, and number of semi-private-rooms, engineering controls, community infection rates, and patient vaccination rates. Nonetheless this is a remarkably well-done study and further helps our understanding of the role of viral load (low Ct=higher viral loads) and transmission.

Effect of Vaccination on Household Transmission of SARS-CoV-2 in England

N Engl J Med published online June 23, 2021

DOI: [10.1056/NEJMc2107717](https://doi.org/10.1056/NEJMc2107717)

The investigators analyzed data from the Household Transmission Evaluation Dataset (HOSTED), which has information on all laboratory-confirmed cases of Covid-19 in England and in which data on all persons sharing the same address are linked. They compared the risk of secondary infection (defined as a positive SARS-CoV-2 test 2 to 14 days after the positive test for the index case) among unvaccinated household contacts of persons with SARS-CoV-2 infection who had received at least one dose of the ChAdOx1 nCoV-19 (AZ) or BNT162b2 (Pfizer) vaccine 21 days or more before testing positive with the risk among unvaccinated household contacts of unvaccinated persons with infection. They fitted logistic-regression models with adjustment for the age and sex of the person with the index case of Covid-19 (index patient) and the household contact, geographic region, calendar week of the index case, deprivation (a composite score of socioeconomic and other factors), and household type and size. We also considered the timing of effects among index patients who had been vaccinated at any time up to the date of the positive test.

Between January 4 and February 28, 2021, there were 960,765 household contacts of unvaccinated index patients, and there were 96,898 secondary cases of Covid-19 (10.1%). Overall, the likelihood of household transmission was approximately 40 to 50% lower in households of index patients who had been vaccinated 21 days or more before testing positive than in households of unvaccinated index patients; the findings were similar for the two vaccines. Assessment of infection risks among household contacts according to the timing of vaccination of the index patient showed protective effects when the vaccine had been administered at least 14 days before the positive test.

Table 1. Numbers of Household Contacts and Secondary Cases of Covid-19, According to Vaccination Status of Index Patient, and Adjusted Odds Ratios.*

Vaccination Status of Index Patient	Household Contacts	Secondary Cases	Adjusted Odds Ratio (95% CI)
	no.	no. (%)	
Not vaccinated before testing positive	960,765	96,898 (10.1)	Reference
Vaccinated with ChAdOx1 nCoV-19 vaccine ≥21 days before testing positive	3,424	196 (5.7)	0.52 (0.43–0.62)
Vaccinated with BNT162b2 vaccine ≥21 days before testing positive	5,939	371 (6.2)	0.54 (0.47–0.62)

Comment: HOSTED does not include data on symptoms or Ct values and has information only on diagnosed cases. Among index patients, those who had been vaccinated were likely to be less severely symptomatic and might have been less infectious than those who were unvaccinated. Notably, most index cases in vaccinated individuals -- 93% -- came before the person had received the recommended second dose. Overall, the findings support previous suggestions that breakthrough infections after COVID vaccination tend not only to be less severe, but also less transmissible than infections in the unvaccinated. In addition, vaccinated individuals were less likely to be infected.