39 Studies on Vaccine Efficacy that Raise Doubts on Vaccine Mandates

BY PAUL ELIAS ALEXANDER OCTOBER 28, 2021 POLICY, PUBLIC HEALTH, VACCINES 17 MINUTE READ

As some people have now been vaccinated for more than half a year, evidence is pouring in about Covid vaccine efficacy. When evaluating vaccine efficacy, it is important to distinguish between efficacy against infection, symptomatic disease, and transmission versus efficacy against hospitalization and death. For infection and symptomatic disease, the COVID-19 vaccines are not as efficacious as hoped, with immunity gradually waning after a few months. For hospitalization and death, immunity is stronger, lasting for at least six months.

The gestalt of the findings implies that the infection explosion globally that we have been experiencing– post double vaccination in e.g. Israel, UK, US etc. –may be due to the vaccinated spreading Covid as much or more than the unvaccinated.

A natural question to ask is whether vaccines with limited capacity to prevent symptomatic disease may drive the evolution of more virulent strains? In a PLoS Biology article from 2015, Read et al. observed that:

> *"Conventional wisdom is that natural selection will remove highly lethal pathogens if host death greatly reduces transmission. Vaccines that keep hosts alive but still allow transmission could thus allow very virulent strains to circulate in a population."*

Hence, rather than the unvaccinated putting the vaccinated at risk, it could theoretically be the vaccinated that are putting the unvaccinated at risk, but we have not yet seen any evidence for that.

Here I summarize studies and reports that shed light on vaccine induced immunity against Covid. They highlight the problems with vaccine mandates that are currently threatening the jobs of millions of people. They also raise doubts about the arguments for vaccinating children.

1) Gazit et al. out of Israel showed that "SARS-CoV-2-naïve vaccinees had a 13-fold (95% CI, 8-21) increased risk for breakthrough infection with the Delta variant compared to those previously infected." When adjusting for the time of disease/vaccine, there was a 27-fold increased risk (95% CI, 13-57).

2) Ignoring the risk of infection, given that someone was infected, Acharya et al. found "no significant difference in cycle threshold values between vaccinated and unvaccinated, asymptomatic and symptomatic groups infected with SARS-CoV-2 Delta."

3) Riemersma et al. found “no difference in viral loads when comparing unvaccinated individuals to those who have vaccine “breakthrough” infections. Furthermore, individuals with vaccine breakthrough infections frequently test positive with viral loads consistent with the ability to shed infectious viruses.” Results indicate that “if vaccinated individuals become infected with the delta variant, they may be sources of SARS-CoV-2 transmission to others.” They reported “low Ct values (<25) in 212 of 310 fully vaccinated (68%) and 246 of 389 (63%) unvaccinated individuals. Testing a subset of these low-Ct samples revealed infectious SARS-CoV-2 in 15 of 17 specimens (88%) from unvaccinated individuals and 37 of 39 (95%) from vaccinated people.”

4) In a study from Qatar, Chemaitelly et al. reported vaccine efficacy (Pfizer) against severe and fatal disease, with efficacy in the 85-95% range at least until 24 weeks after the second dose. As a contrast, the efficacy against infection waned down to around 30% at 15-19 weeks after the second dose.

5) From Wisconsin, Riemersma et al. reported that vaccinated individuals who get infected with the Delta variant can transmit SARS-CoV-2 to others. They found an elevated viral load in the unvaccinated and vaccinated symptomatic persons (68% and 69% respectively, 158/232 and 156/225). Moreover, in the asymptomatic persons, they uncovered elevated viral loads (29% and 82% respectively) in the unvaccinated and the vaccinated respectively. This suggests that the vaccinated can be

infected, harbor, cultivate, and transmit the virus readily and unknowingly.

6) Subramanian reported that "at the country-level, there appears to be no discernable relationship between percentage of population fully vaccinated and new COVID-19 cases." When comparing 2947 counties in the United States, there were slightly less cases in more vaccinated locations. In other words, there is no clear discernable relationship .

7) Chau et al. looked at transmission of SARS-CoV-2 Delta variant among vaccinated healthcare workers in Vietnams. Of 69 healthcare workers that tested positive for SARS-CoV-2, 62 participated in the clinical study, all of whom recovered. For 23 of them, complete-genome sequences were obtained, and all belonged to the Delta variant. "Viral loads of breakthrough Delta variant infection cases were 251 times higher than those of cases infected with old strains detected between March-April 2020".

8) In Barnstable, Massachusetts, Brown et al found that among 469 cases of COVID-19, 74% were fully vaccinated, and that "the vaccinated had on average more virus in their nose than the unvaccinated who were infected."

9) Reporting on a nosocomial hospital outbreak in Finland, Hetemäli et al. observed that "both symptomatic and asymptomatic infections were found among vaccinated health care workers, and secondary transmission

occurred from those with symptomatic infections despite use of personal protective equipment."

10) In a hospital outbreak investigation in Israel, Shitrit et al. observed "high transmissibility of the SARS-CoV-2 Delta variant among twice vaccinated and masked individuals." They added that "this suggests some waning of immunity, albeit still providing protection for individuals without comorbidities."

11) In the UK COVID-19 vaccine Surveillance Report for week #42, it was noted that there is "waning of the N antibody response over time" and "that N antibody levels appear to be lower in individuals who acquire infection following 2 doses of vaccination." The same report (Table 2, page 13), shows the in the older age groups above 30, the double vaccinated persons have greater infection risk than the unvaccinated, presumably because the latter group include more people with stronger natural immunity from prior Covid disease. As a contrast, the vaccinated people had a lower risk of death than the unvaccinated, across all age groups, indicating that vaccines provide more protection against death than against infection. See also UK PHE reports 43, 44, 45, 46 for similar data.

12) In Israel, Levin et al. "conducted a 6-month longitudinal prospective study involving vaccinated health care workers who were tested monthly for the presence of anti-spike IgG and neutralizing antibodies". They found that "six months after receipt of the second dose of the BNT162b2

vaccine, humoral response was substantially decreased, especially among men, among persons 65 years of age or older, and among persons with immunosuppression."

13) In a study from New York State, Rosenberg et al. reported that "During May 3–July 25, 2021, the overall age-adjusted vaccine effectiveness against hospitalization in New York was relatively stable 89.5%–95.1%). The overall age-adjusted vaccine effectiveness against infection for all New York adults declined from 91.8% to 75.0%."

14) Suthar et al. noted that "Our data demonstrate a substantial waning of antibody responses and T cell immunity to SARS-CoV-2 and its variants, at 6 months following the second immunization with the BNT162b2 vaccine."

15) In a study from Umeå University in Sweden, Nordström et al. observed that "vaccine effectiveness of BNT162b2 against infection waned progressively from 92% (95% CI, 92-93, P<0·001) at day 15-30 to 47% (95% CI, 39-55, P<0·001) at day 121-180, and from day 211 and onwards no effectiveness could be detected (23%; 95% CI, -2-41, P=0·07)."

16) Yahi et al. have reported that "in the case of the Delta variant, neutralizing antibodies have a decreased affinity for the spike protein, whereas facilitating antibodies display a strikingly increased affinity. Thus, antibody dependent enhancement may be a concern for people receiving vaccines based on the original Wuhan strain spike sequence."

17) Goldberg et al. (BNT162b2 Vaccine in Israel) reported that "immunity against the delta variant of SARS-CoV-2 waned in all age groups a few months after receipt of the second dose of vaccine."

18) Singanayagam et al. examined the transmission and viral load kinetics in vaccinated and unvaccinated individuals with mild delta variant infection in the community. They found that (in 602 community contacts (identified via the UK contract-tracing system) of 471 UK COVID-19 index cases were recruited to the Assessment of Transmission and Contagiousness of COVID-19 in Contacts cohort study and contributed 8145 upper respiratory tract samples from daily sampling for up to 20 days) "vaccination reduces the risk of delta variant infection and accelerates viral clearance. Nonetheless, fully vaccinated individuals with breakthrough infections have peak viral load similar to unvaccinated cases and can efficiently transmit infection in household settings, including to fully vaccinated contacts."

19. Keehner et al. in NEJM, has recently reported on the resurgence of SARS-CoV-2 infection in a highly vaccinated health system workforce. Vaccination with mRNA vaccines began in mid-December 2020; by March, 76% of the workforce had been fully vaccinated, and by July, the percentage had risen to 87%. Infections had decreased dramatically by early February 2021…"coincident with the end of California's mask mandate on June 15 and the rapid dominance of the B.1.617.2 (delta) variant that first emerged in mid-April and accounted for over 95% of UCSDH isolates by the end of July, infections increased

rapidly, including cases among fully vaccinated persons...researchers reported that the "dramatic change in vaccine effectiveness from June to July is likely to be due to both the emergence of the delta variant and waning immunity over time."

20. Juthani et al. sought to describe the impact of vaccination on admission to hospital in patients with confirmed SARS-CoV-2 infection using real-world data collected by the Yale New Haven Health System. "Patients were considered fully vaccinated if the final dose (either second dose of BNT162b2 or mRNA-1273, or first dose of Ad.26.COV2.S) was administered at least 14 days before symptom onset or a positive PCR test for SARS-CoV-2. In total, we identified 969 patients who were admitted to a Yale New Haven Health System hospital with a confirmed positive PCR test for SARS-CoV-2"...Researchers reported "a higher number of patients with severe or critical illness in those who received the BNT162b2 vaccine than in those who received mRNA-1273 or Ad.26.COV2.S..."

21. A very recent study published by the CDC reported that a majority (53%) of patients who were hospitalized with Covid-19-like illnesses were already fully vaccinated with two-dose RNA shots. Table 1 reveals that among the 20,101 immunocompromised adults hospitalized with Covid-19, 10,564 (53%) were fully-vaccinated with the Pfizer or Moderna vaccine (Vaccination was defined as having received exactly 2 doses of an mRNA-based COVID-19 vaccine ≥14 days before the hospitalization index date, which was the date of respiratory specimen collection associated with the

most recent positive or negative SARS-CoV-2 test result before the hospitalization or the hospitalization date if testing only occurred after the admission). This highlights the ongoing challenges faced with Delta breakthrough when vaccinated.

22. Eyre, 2021 looked at The impact of SARS-CoV-2 vaccination on Alpha & Delta variant transmission. They reported that "while vaccination still lowers the risk of infection, similar viral loads in vaccinated and unvaccinated individuals infected with Delta question how much vaccination prevents onward transmission... transmission reductions declined over time since second vaccination, for Delta reaching similar levels to unvaccinated individuals by 12 weeks for ChAdOx1 and attenuating substantially for BNT162b2. Protection from vaccination in contacts also declined in the 3 months after second vaccination... vaccination reduces transmission of Delta, but by less than the Alpha variant."

23. Levine-Tiefenbrun, 2021 looked at Viral loads of Delta-variant SARS-CoV-2 breakthrough infections after vaccination and booster with BNT162b2, and reported the viral load reduction effectiveness declines with time after vaccination, "significantly decreasing at 3 months after vaccination and effectively vanishing after about 6 months."

24. Puranik, 2021 looked at a Comparison of two highly-effective mRNA vaccines for COVID-19 during periods of Alpha and Delta variant prevalence, reporting "In July, vaccine effectiveness against

hospitalization has remained high (mRNA-1273: 81%, 95% CI: 33–96.3%; BNT162b2: 75%, 95% CI: 24–93.9%), but effectiveness against infection was lower for both vaccines (mRNA-1273: 76%, 95% CI: 58–87%; BNT162b2: 42%, 95% CI: 13–62%), with a more pronounced reduction for BNT162b2."

25. Saade, 2021 looked at Live virus neutralization testing in convalescent patients and subjects vaccinated against 19A, 20B, 20I/501Y.V1 and 20H/501Y.V2 isolates of SARS-CoV-2, and reported as "Assessed the neutralizing capacity of antibodies to prevent cell infection, using a live virus neutralization test with different strains [19A (initial one), 20B (B.1.1.241 lineage), 20I/501Y.V1 (B.1.1.7 lineage), and 20H/501Y.V2 (B.1.351 lineage)] in serum samples collected from different populations: two-dose vaccinated COVID-19-naive healthcare workers (HCWs; Pfizer-BioNTech BNT161b2), 6-months post mild COVID-19 HCWs, and critical COVID-19 patients... finding of the present study is the reduced neutralizing response observed towards the 20H/501Y.V2 variant in fully immunized subjects with the BNT162b2 vaccine by comparison to the wild type and 20I/501Y.V1 variant."

26. Canaday, 2021 looked at Significant reduction in humoral immunity among healthcare workers and nursing home residents 6 months after COVID-19 BNT162b2 mRNA vaccination, reporting "Anti-spike, anti-RBD and neutralization levels dropped more than 84% over 6 months' time in all groups irrespective of prior SARS-CoV-2 infection. At 6 months post-vaccine, 70% of the infection-naive NH residents had neutralization titers

at or below the lower limit of detection compared to 16% at 2 weeks after full vaccination. These data demonstrate a significant reduction in levels of antibody in all groups. In particular, those infection-naive NH residents had lower initial post-vaccination humoral immunity immediately and exhibited the greatest declines 6 months later."

27. Israel, 2021 looked at Large-scale study of antibody titer decay following BNT162b2 mRNA vaccine or SARS-CoV-2 infection, and reported as "To determine the kinetics of SARS-CoV-2 IgG antibodies following administration of two doses of BNT162b2 vaccine, or SARS-CoV-2 infection in unvaccinated individuals...In vaccinated subjects, antibody titers decreased by up to 40% each subsequent month while in convalescents they decreased by less than 5% per month. Six months after BNT162b2 vaccination 16.1% subjects had antibody levels below the sero-positivity threshold of <50 AU/mL, while only 10.8% of convalescent patients were below <50 AU/mL threshold after 9 months from SARS-CoV-2 infection."

28. Eyran, 2020 examined The longitudinal kinetics of antibodies in COVID-19 recovered patients over 14 months, and found "a significantly faster decay in naïve vaccinees compared to recovered patients suggesting that the serological memory following natural infection is more robust compared to vaccination. Our data highlights the differences between serological memory induced by natural infection vs. vaccination."

29. Salvatore et al. examined the transmission potential of vaccinated and unvaccinated persons infected with the SARS-CoV-2 Delta variant in a federal prison, July-August 2021. They found a total of 978 specimens were provided by 95 participants, "of whom 78 (82%) were fully vaccinated and 17 (18%) were not fully vaccinated....clinicians and public health practitioners should consider vaccinated persons who become infected with SARS-CoV-2 to be no less infectious than unvaccinated persons."

30) Andeweg et al. analyzed 28,578 sequenced SARS-CoV-2 samples from individuals with known immune status obtained through national community testing in the Netherlands from March to August 2021. They found evidence for an "increased risk of infection by the Beta (B.1.351), Gamma (P.1), or Delta (B.1.617.2) variants compared to the Alpha (B.1.1.7) variant after vaccination. No clear differences were found between vaccines. However, the effect was larger in the first 14-59 days after complete vaccination compared to 60 days and longer. In contrast to vaccine-induced immunity, no increased risk for reinfection with Beta, Gamma or Delta variants relative to Alpha variant was found in individuals with infection-induced immunity."

31) Di Fusco et al. conducted an evaluation of COVID-19 vaccine breakthrough infections among immunocompromised patients fully vaccinated with BNT162b2. "COVID-19 vaccine breakthrough infections were examined in fully vaccinated (≥14 days after 2nd dose) IC individuals (IC cohort), 12 mutually exclusive IC condition groups, and a non-IC

cohort." They found that"of 1,277,747 individuals ≥16 years of age who received 2 BNT162b2 doses, 225,796 (17.7%) were identified as IC (median age: 58 years; 56.3% female). The most prevalent IC conditions were solid malignancy (32.0%), kidney disease (19.5%), and rheumatologic/inflammatory conditions (16.7%). Among the fully vaccinated IC and non-IC cohorts, a total of 978 breakthrough infections were observed during the study period; 124 (12.7%) resulted in hospitalization and 2 (0.2%) were inpatient deaths. IC individuals accounted for 38.2% (*N* = 374) of all breakthrough infections, 59.7% (*N* = 74) of all hospitalizations, and 100% (*N* = 2) of inpatient deaths. The proportion with breakthrough infections was 3 times higher in the IC cohort compared to the non-IC cohort (*N* = 374 [0.18%] vs. *N* = 604 [0.06%]; unadjusted incidence rates were 0.89 and 0.34 per 100 person-years, respectively."

32) Mallapaty (NATURE) reported that the protective effect of being vaccinated if you already had infection is "relatively small, and dwindles alarmingly at three months after the receipt of the second shot." Mallapaty further adds what we have been warning the public health community which is that persons infected with Delta have about the same levels of viral genetic materials in their noses "regardless of whether they'd previously been vaccinated, suggesting that vaccinated and unvaccinated people might be equally infectious." Mallapaty reported on testing data from 139,164 close contacts of 95,716 people infected with SARS-CoV-2 between January and August 2021 in the United Kingdom, and at a time when the Alpha and Delta variants were

competing for dominance. The finding was that "although the vaccines did offer some protection against infection and onward transmission, Delta dampened that effect. A person who was fully vaccinated and then had a 'breakthrough' Delta infection was almost twice as likely to pass on the virus as someone who was infected with Alpha. And that was on top of the higher risk of having a breakthrough infection caused by Delta than one caused by Alpha."

33) Chia et al. reported that PCR cycle threshold (Ct) values were "similar between both vaccinated and unvaccinated groups at diagnosis, but viral loads decreased faster in vaccinated individuals. Early, robust boosting of anti-spike protein antibodies was observed in vaccinated patients, however, these titers were significantly lower against B.1.617.2 as compared with the wildtype vaccine strain."

34) Wilhelm et al. reported on reduced neutralization of SARS-CoV-2 omicron variant by vaccine sera and monoclonal antibodies. "*in vitro* findings using authentic SARS-CoV-2 variants indicate that in contrast to the currently circulating Delta variant, the neutralization efficacy of vaccine-elicited sera against Omicron was severely reduced highlighting T-cell mediated immunity as essential barrier to prevent severe COVID-19."

35) CDC reported on the details for 43 cases of COVID-19 attributed to the Omicron variant. They found that "34 (79%) occurred in persons who completed the primary series of an FDA-authorized or approved

COVID-19 vaccine ≥14 days before symptom onset or receipt of a positive SARS-CoV-2 test result."

36) Dejnirattisai et al. presented live neutralisation titres against SARS-CoV-2 Omicron variant, and examined it relative to neutralisation against the Victoria, Beta and Delta variants. They reported a significant drop in "neutralisation titres in recipients of both AZD1222 and BNT16b2 primary courses, with evidence of some recipients failing to neutralise at all."

37) Cele et al. assessed whether Omicron variant escapes antibody neutralization "elicited by the Pfizer BNT162b2 mRNA vaccine in people who were vaccinated only or vaccinated and previously infected." They reported that Omicron variant "still required the ACE2 receptor to infect but had extensive escape of Pfizer elicited neutralization."

38) Holm Hansen et al.'s Denmark study looked at vaccine effectiveness against SARS-CoV-2 infection with the Omicron or Delta variants following a two-dose or booster BNT162b2 or mRNA-1273 vaccination series. A key finding was reported as "VE against Omicron was 55.2% initially following primary BNT162b2 vaccination, but waned quickly thereafter. Although estimated with less precision, VE against Omicron after primary mRNA-1273 vaccination similarly indicated a rapid decline in protection. By comparison, both vaccines showed higher, longer-lasting protection against Delta." In other words, the vaccine that has failed against Delta is even far worse for Omicron. The table and figure below paint a devastating picture. See where the green dot is (Omicron variant)

in the vertical lines (blue is Delta) and the 2 edges of the bars (upper and lower lips) 91 days out for Omicron (3 months). Both Pfizer and Moderna show negative efficacy for Omicron at 31 days (both are below the 'line of no effect' or '0'). The comparative table is even more devastating for it shows how much less vaccine effectiveness there is for Omicron. For example, at 1-30 days, Pfizer showed 55.2% effectiveness for Omicron versus 86.7% for Delta, and for the same period, Moderna showed 36.7% effectiveness for Omicron versus 88.2% for Delta.

39) UK reporting showed that boosters protect against symptomatic COVID-19 caused by Omicron for about 10 weeks; the UK Health Security Agency reported protection against symptomatic COVID-19 caused by the variant dropped from 70% to 45% following a Pfizer booster for those initially vaccinated with the shot developed by Pfizer with BioNTech. Specifically reporting by the UK Health Security Agency showed "Among those who received an AstraZeneca primary course, vaccine effectiveness was around 60% 2 to 4 weeks after either a Pfizer or Moderna booster, then dropped to 35% with a Pfizer booster and 45% with a Moderna booster by 10 weeks after the booster. Among those who received a Pfizer primary course, vaccine effectiveness was around 70% after a Pfizer booster, dropping to 45% after 10-plus weeks and stayed around 70 to 75% after a Moderna booster up to 9 weeks after booster."

These finding are not unknown to public health authorities. In fact, CDC Director Rochelle Walensky have said that the Covid vaccines are

working “exceptionally well” against severe illness and death, but “what they can’t do anymore is prevent transmission.”

What these studies show, are that vaccines are important to reduce severe disease and death, but unable to prevent the disease from spreading and eventually infect most of us. That is, while the vaccines provide individual benefits to the vaccinee, and especially to older high-risk people, the public benefit of universal vaccination is in grave doubt. As such, Covid vaccines should not be expected to contribute to eliminating the communal spread of the virus or the reaching of herd immunity. This unravels the rationale for vaccine mandates and passports.

Author

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Dr Alexander holds a PhD. He has experience in epidemiology and in the teaching clinical epidemiology, evidence-based medicine, and research methodology. Dr Alexander is a former Assistant Professor at McMaster University in evidence-based medicine and research methods; former COVID Pandemic evidence-synthesis consultant advisor to WHO-PAHO Washington, DC (2020) and

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