Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

acknowledge in the paper) as the data originated from a pilot study and were limited in fitting to the increasing phase of the epidemic. Modelling of SARS-CoV-2 transmission in UK schools has an advantage here, with long-term data available on student and staff absences, as well as reported testing in the relevant age groups. These data have been used by my group (Leng and colleagues[7]) and by Woodhouse and colleagues[5] to parameterise and validate school-based models. Both groups agree with Colosi and colleagues that testing could have an important effect in reducing infections and school days missed.

In time, as more data become available in a wider range of circumstances, and modelling and analysis of existing data are published, a consensus might be reached on the magnitude of the likely effect of SARS-CoV-2 testing strategies in schools. The work by Colosi and colleagues underscores the value of detailed epidemiological and social data obtained in similar populations to better inform future epidemic control policies.

I declare no competing interests.

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The S-Trimer (SCB-2019) COVID-19 vaccine and reinfection with SARS-CoV-2

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By the end of March, 2022, more than 476 million confirmed cases of COVID-19 and 6·1 million deaths from COVID-19 have been reported In the meantime, one of the world's largest vaccination campaigns is ongoing. Approximately 5·0 billion people worldwide have received at least one dose of COVID-19 vaccine, and more than 4·4 billion people have completed primary series of immunisation with COVID-19 vaccines.

Previous infection with SARS-CoV-2 could induce an effective immunity against future reinfections in most of the naturally infected population, with robust protection of 80% or higher.[1] However, individuals aged 65 years or older had less than 50% protection against repeat SARS-CoV-2 infection.[2] Guidelines recommend that patients who have recovered from infection should also receive COVID-19 vaccines to prevent reinfection. However, data regarding vaccine effectiveness in this are still scarce.

In *The Lancet Infectious Diseases*, Ralf Clemens and colleagues[3] reported a secondary analysis of the SPECTRA study, providing evidence for a protective effect afforded by previous exposure to SARS-CoV-2 against subsequent SARS-CoV-2 reinfection. Moreover, Clemens and colleagues also provide evidence for additional benefits of vaccination for this naturally infected population, such as added protection against severe COVID-19 or COVID-19-associated hospitalisations. The SPECTRA study is a phase 2 and 3 multicentre, double-blind, randomised, placebo-controlled trial that is designed to evaluate the efficacy and safety of the SCB-2019 COVID-19 vaccine, Clover's Trimeric Recombinant protein-based COVID-19 vaccine adjuvanted with CpG-1018 and alum, which is still ongoing.

In the initial report of this study, SCB-2019 was found to have an efficacy of 67·2% (95·72% CI 54·3–76·8) against COVID-19 of any severity, 83·7% (97·86% CI 55·9–95·4) efficacy against moderate to-severe COVID-19, and 100% (97·86% CI 25·3–100·0) efficacy against severe COVID-19. These results were based on

12 355 (41%) SARS-CoV-2-naive participants at baseline, out of a total of 30 128 participants.[4] The results of SCB-2019 protection in this previously uninfected population are important, but also incomplete, excluding half of the enrolled participants who were seropositive at baseline.

Clemens and colleagues found a largely reduced risk against reinfection due to the previous exposure to SARS-CoV-2, with an efficacy of 83·2% (95% CI 78·0–87·3) against any COVID-19, 92·5% (82·9–97·3) against moderate-to-severe COVID-19, and 100% (59·3–100) against severe COVID-19. In addition, protective efficacy of previous exposure against viral variants varied from 100% for alpha (B.1.1.7) and lambda (C.37) variants, 88·6–93·6% for gamma (P.1) and mu (B.1.621) variants, 72·2% against the beta (B.1.351) variant, and 77·2% against the delta (B.1.617.2) variant. Administration of one dose of SCB-2019 in participants who had been pre-exposed to SARS-CoV-2 led to additional vaccine efficacy of 49·9% (1·5–75·6) against any symptomatic COVID-19, and two doses led to additional vaccine efficacy of 64·2% (26·5–83·8). The results reported by Clemens and colleagues were consistent with those found in a previous retrospective cohort study[5] of mRNA vaccine BNT162b2 (Pfizer-BioNTech) in patients who had recovered from SARS-CoV-2 infection.

Although SARS-CoV-2-exposed individuals were not the primary targeted population in the SPECTRA study, these results have important practical significance for understanding the risk of reinfection and the need for COVID-19 vaccines with such a large proportion of seropositive participants from enrolment, which is still expanding in this evolving pandemic. However, generalisation of the results from Clemens and colleagues' study might be compromised by two limitations. First, the reinfection risks were observed before the emergence of the omicron variant. It is estimated that omicron is at least three times more likely than previous variants to cause reinfection, which might contribute to a significantly higher risk of reinfection in the population.[6] Second, Clemens and colleagues' study was affected by only being able to include a limited range of age groups, and included only a small number (<2%) of individuals aged over 65 years. Older age might be associated with lower protection afforded by immunity from natural exposure and might also be associated with a higher risk of reinfection than younger age groups.

Nevertheless, SCB-2019 showed a good safety profile and promising protective efficacy in populations with or without previous SARS-CoV-2 exposure in the SPECTRA study. These results support the recommendation that all populations should receive COVID-19 vaccines, including patients who have recovered from COVID-19. It also should be noted that natural immunity arising from previous exposure to SARS-CoV-2 substantially decreases the risk of future infection and severe COVID-19 disease. Policy makers should give priority to strategies that can encourage more equitable distribution of effective COVID-19 vaccines and reduce vaccination hesitancy in populations with no previous infection of SARS-CoV-2, which will be more effective at reducing severe cases than offering COVID-19 vaccines to individuals who have had a previous infection.

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