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.

(effective border quarantine; test, trace isolate, and support). This will ensure that everyone is protected and make it much less likely that we will need further restrictions or lockdowns in the autumn.

JD, ZHa, MM, SM, CP, AR, and SR are members of Independent SAGE. SR is a member of the advisory group to the Scottish Chief Medical Officer. RW, SM, SR, and JD are participants in the Independent Scientific Pandemic Insights Group on Behaviours, the behavioural science subgroup of SAGE. JD declares funding for research on public behaviour in the pandemic, paid to the University of Sussex, from the Economic and Social Research Council (ESRC) and fees from the *BBC* and *The Guardian* for media appearances and articles. SG declares research grants from the Medical Research Council (MRC) and the AMMF and fees from Hallmark Care Homes for webinars about vaccine hesitancy. SG is also a member of the UK Government's COVID-19 Expert Panel on Home Testing and the COVID-19 International Best Practice Advisory Group, and he is a consultant on shielding for the International Comparators Joint Unit (IBPAG-ICJU). SG is Chair of the Virus Division of the Microbiology Society and a member of the British Society for Antimicrobial Chemotherapy grants review panel. SM declares research grants from the MRC, the ESRC, the Wellcome Trust, Cancer Research UK, and the National Institutes of Health Research and fees from the BBC and ITN for media appearances. All other authors declare no competing interests. A summit to discuss the concerns outlined in this Correspondence will take place on July 8, 2021. Signatories of this Correspondence are listed in the appendix.

For more on the **summit** see https://www.johnsnowmemo.com/summitdeclaration.html

See **Online** for appendix

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See **Online** for appendix

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Antibody response after second BNT162b2 dose in allogeneic HSCT recipients

The prognosis of COVID-19 infection is poor in haematopoietic stem-cell transplant (HSCT) recipients.[1,2] In a large multicentric series of 318 HSCT recipients (184 allogeneic HSCT recipients and 134 autologous HSCT recipients), the probability of overall survival at 30 days after the diagnosis of COVID-19 infection was notably dismal, at 68% (95% CI 58–77) and 67% (55–78) for allogeneic HSCT recipients and autologous HSCT recipients, respectively.[1] Immunocompromised patients have been excluded from initial studies of SARS-CoV-2 mRNA vaccine efficacy, so the efficacy of vaccination in this population warrants evaluation.

To analyse the immunogenicity of the BNT162b2 mRNA vaccine (Pfizer–BioNTech), we used the IgG II Quant Assay (Abbot Laboratories, Wiesbaden, Germany) to quantify spike glycoprotein-specific IgG receptor-binding domain (IgG[S-RBD]) levels at a median of 28 days (IQR 26–31) after the second vaccine dose in 88 recipients who had received two successive doses (at 4-week interval) at a median of 23 months (range 3–213 [IQR 9–30]) after allogeneic HSCT. IgG(S-RBD) titres could be quantified in 69 (78%) participants, whereas IgG(S-RBD) was detected but not quantifiable in three participants (anti-S titre <21 arbitrary unit [AU] per mL) and not detected in 16 participants (anti-S titre <6·8 AU/mL). In parallel, nucleoprotein-specific IgG was detected in seven of 88 participants, denoting previous SARS-CoV-2 exposure.

As previously reported for surrogate measure of vaccine protection, we stratified samples by IgG(S-RBD) titres above or below 4160 AU/mL as this threshold has previously been shown to correspond to a 0·95 probability of virus neutralisation in in-vitro plaque reduction neutralisation tests.[3] In a comparison of characteristics of patients with IgG(S-RBD) titres above (n=52) and below (n=36) this threshold, a time interval greater than 12 months between HSCT and vaccination, as well as an absolute lymphocyte count in peripheral blood above 1G/L at the time of vaccination correlated with protective IgG(S-RBD) titres after vaccination (appendix). In comparison, participants who had received systemic immunosuppressive drugs within 3 months of vaccination had subprotective IgG(S-RBD) titres. Systemic immunosuppressive treatments within 3 months of vaccination, together with a lymphocyte count below 1 G/L in peripheral blood, remained

independently correlated with low IgG(S-RBD) titres in multivariable analysis, whereas the correlation with the time interval between HSCT and vaccination was lost. With a median follow-up of 84 days (range 44–121 [IQR 65–110]) after the first vaccination dose, we did not observe any COVID-19 infection in this cohort.

In this first evaluation of immunogenicity in allogeneic HSCT recipients after two vaccine doses, we observed overall frequent and high levels of humoral responses, which contrasts with recent observations in solid organ transplant recipients who are receiving very long-term pharmacological immunosuppression.[4] We identified lymphocyte count as well as recent pharmacological immunosuppression, rather than the sole timing of vaccination after HSCT, as determinants of humoral response. Our findings support the large scale vaccination of allogeneic HSCT recipients, although additional multicentre and long-term studies are needed to specify the level of immunological protection against infection, also taking into account the effect of a third vaccine dose in non-responding patients.

We declare no competing interests.

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Tocilizumab in COVID-19 therapy: who benefits, and how?

The randomised controlled RECOVERY trial[1] has met its primary endpoint of reduced 28-day mortality. We congratulate the RECOVERY Collaborative Group for this excellent study. However, the mortality at day 28 was up to 31% in the tocilizumab group and was higher than the results of other published randomised controlled trials.[2] The pathophysiology underlying COVID-19 is characterised by SARS-CoV-2 viral infection-induced inflammatory response, cell death, and microvascular thrombosis. Thrombosis appears to be common in patients with COVID-19 pneumonia and could also be responsible for multiorgan failure in patients who are critically ill.[3] Larger studies have shown that patients with COVID-19 are at increased risk of thrombosis and that 29·4% of patients in the intensive care unit had a thrombotic event (13·6% venous and 18·6% arterial).[4] Furthermore, the thrombotic event is independently associated with mortality of COVID-19 patients.[4]

ClinicalTrials.gov records thrombotic events including acute pulmonary embolism, deep vein thrombosis, ischaemic stroke, myocardial infarction, or systemic arterial embolism as the prespecified outcome of this study protocol. However, the RECOVERY Collaborative Group omitted such important outcomes from the published results without any clear explanation.

There is clinical evidence to suggest tocilizumab therapy in patients with COVID-19 may be associated with thrombotic events.[5] To better analyse the efficacy and safety of tocilizumab, the RECOVERY Collaborative Group should specify the number of thrombotic or thromboembolic events observed in their study and specifically detail the proportion of patients receiving therapeutic anticoagulation in both groups. These results will better inform clinical practice on the use of tocilizumab for patients with COVID-19.

CY is a former postdoctoral fellow at the University Health Network. We declare no competing interests.

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The RECOVERY Collaborative Group reported statistically significant improvement in survival of patients with COVID-19 who were receiving tocilizumab interleukin (IL)-6 inhibitor, albeit with very modest reduction of mortality (31% *vs* 35% with usual care, p=0·0028).[1] This result adds to a number of studies with tocilizumab and other IL-6 antagonists, such as sarilumab, which showed only minor, or no, reduction in mortality.[2] Given that IL-6 is associated with COVID-19 severity and mortality,[3] the question arises as to why IL-6 antagonist therapy does not substantially improve survival.

In April, 2021, we showed that IL-6 serum concentrations are indeed associated with COVID-19 severity (appendix); however, a better classification of severity is obtained when IL-6 is combined with other cytokine concentrations.[4] Moreover, within each respiratory severity group, IL-6 is not significantly associated with mortality (appendix). It is rather distinct combinations of interferon α, inteferon β, IL-10, and tumour necrosis

See **Online** for appendix