Financial support. Reckitt Benckiser funded the preparation of the manuscript and the figure.

Conflicts of interest. Raymond Nims received a fee from Reckitt Benckiser for writing and editing the manuscript. The other authors report no conflicts of interest relevant to this article.

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Could it be that the B.1.1.7 lineage is more deadly?

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To the Editor—The world had been shocked by the emergence of a new variant (B.1.1.7) of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which might have been circulated since September 2020 from the southeastern region of England.[1] As reported, this new lineage of SARS-CoV-2 has acquired 17 mutations in its genome that lead to amino acid changes within the Spike receptor-binding domain.[1] The analyses thus far have indicated that the B.1.1.7 lineage might be more transmissible than other SARS-CoV-2 lineages, with a reproduction ratio higher than those of other SARS-CoV-2 lineages by 0.4 and 0.7 (ie, up to 70% more transmissible).[2] Santos et al[3] employed in silico methods to analyze the interaction between the Spike receptor-binding domain of the B.1.1.7 variant and the ACE2 receptor. They discovered that the N501Y mutant residue on the spike protein of the B.1.1.7 variant establishes a more significant number of interactions with the ACE2 receptor, indicating an increased interaction force with the ACE2 receptor, which could explain its increased infectivity. In contrast, although the newly discovered 501Y.V2 variant, which spread rapidly in the Eastern Cape and Western Cape Provinces of South Africa, also contains the N501Y mutant residue on the spike protein, the substitutions K417N and E484K in the South African variant 501.V2 would reduce its binding affinity with ACE2 receptor, resulting in binding affinity comparable to that of the wild-type Spike receptor-binding domain.[4]

Arif[5] commented that there is uncertainty regarding the severity of disease in people infected with SARS-CoV-2 of the B.1.1.7 lineage. Nevertheless, the general assumption that the B.1.1.7 lineage would not lead to increased severity of COVID-19 may not hold true because increased binding affinity between the Spike receptor-binding domain and ACE2 receptor could lead to more ACE2 downregulation should an individual acquire this new variant compared to other variants.[6] Interestingly, the mutation in the D614G variant, which currently dominates in much of the world, does not increase Spike protein affinity for ACE2.[7] Indeed, the D614G variant is not associated with increased severity of COVID-19 compared to the ancestral strain, although with increased viral load.[8,9] Until the association between B.1.1.7 lineage and increased severity of COVID-19 is conclusively discredited, perhaps patients who acquire the new B.1.1.7 variant should be managed more aggressively with anti-inflammatory therapies, and the current antiviral armamentarium of COVID-19, especially remdesivir, should be evaluated if it preserves its efficacy against this new variant.

Acknowledgments.

Financial support. No financial support was provided relevant to this article.

Conflicts of interest. All authors report no conflicts of interest relevant to this article.

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Cite this article: Kow CS and Hasan SS. (2022). Could it be that the B.1.1.7 lineage is more deadly?. *Infection Control & Hospital Epidemiology*, 43: 678–679, https://doi.org/10.1017/ice.2021.59

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Warnings regarding the potential coronavirus disease 2019 (COVID-19) transmission risk: Vaccination is not enough

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To the Editor—Caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), the coronavirus disease 2019 (COVID-19) pandemic has continued to spread around the world, resulting in a global health emergency of inconceivable magnitude.[1,2] Currently, several vaccines, including the Pfizer-BioNTech COVID-19 vaccine and the Moderna COVID-19 vaccine, have been authorized for emergency use to prevent COVID-19.[3] A previous study indicated that the use of a vaccine in combination with measures that reduce contact between susceptible individuals and COVID-19 carriers will significantly decrease the per-day risk of infection as long as at least 50% of people receive it.[4] In this article, these researchers also expressed their concern that potential vaccine defiance and abandoning other protection options may cause even worse results in COVID-19 prevention.[4] In addition, due to the limited supply of COVID-19 vaccine in the United States, Centers for Disease Control and Prevention (CDC) recommends that initial supplies of SARS-CoV-2 vaccine be allocated to healthcare personnel and long-term care facility residents.[5] Considering the accessibility of vaccines in different regions and populations around the world, public health polices including keeping social distance and wearing face masks, are still of great importance, even though an effective vaccine has been introduced.

Furthermore, according to *Morbidity and Mortality Weekly Report* from the CDC,[6] several issues still need to be explored: (1) No data assessing the efficacy of vaccine in prevention of asymptomatic SARS-CoV-2 infection are available; thus, the potential transmission risk of SARS-CoV-2 among asymptomatic infected individuals cannot be ignored, even after vaccination. (2) Considering the time interval between the invention of the Pfizer-BioNTech SARS-CoV-2 vaccine and its emergency use authorization (EUA), the long-term effects of this vaccine (including adverse and protected effects) are still not entirely clear, and further surveillance is still necessary. (3) It takes ~14 days to obtain protection from infection after the first shot of Pfizer vaccine,[7] and individuals may still be susceptible during the first few days to weeks after vaccination, whereas the general public may not fully understand this and may be less compliant with current nonpharmaceutical interventions (NPIs) immediately after receiving the vaccine.

In conclusion, uncertainties remain in the long-term effect of SARS-CoV-2 vaccines, and accessibility of vaccines is still limited. Strict public health policies aiming to reduce the spread of SARS-CoV-2 are still warranted and should not be ignored.

Financial support. No financial support was provided relevant to this article.

Conflicts of interest. All authors report no conflicts of interest relevant to this article.

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Cite this article: Zhao T, *et al.* (2022). Warnings regarding the potential coronavirus disease 2019 (COVID-19) transmission risk: Vaccination is not enough. *Infection Control & Hospital Epidemiology*, 43: 679–680, https://doi.org/10.1017/ice.2021.63