Estimating the number of hospital admissions due to respiratory syncytial virus in children

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Dear Editors,

We read with great interest the paper by Bardsley et al\(^1\) describing the epidemiology of respiratory syncytial virus (RSV) in England during the COVID-19 pandemic. We fully support the aim of estimating the health service impact of the temporary suppression and subsequent resurgence of RSV circulation in 2020-2021.

However, we question the methods used to determine RSV hospital burden. Bardsley et al attribute all hospital admissions with a primary diagnosis of bronchiolitis, pneumonia, unspecified lower respiratory infection, bronchitis, or upper respiratory infection to RSV. They cite our paper\(^2\) as justification for their definition of an RSV-attributable hospital admission.

This is not the definition we used. We fitted time series regression models to national virological testing and hospital data to estimate the number of RSV-related hospital admissions in children <5 years old in England. We concluded that whilst 70%-82% of bronchiolitis admissions could be attributed to RSV, only 7%-11% of upper respiratory infection admissions were RSV-related. Consequently, the expected number of RSV hospital admissions provided by Bardsley et al for the winter of 2020/21 is likely vastly overestimated, even after allowing for increasing paediatric hospital admission rates\(^3\) since 2012 (the last year in our dataset).

Further, Bardsley et al expect over 70,000 RSV-related hospital admissions in summer 2021 despite minimal RSV circulation during summer months in England (figures 2A-2B). The authors consequently estimate only an 11% increase in RSV-attributed hospital admissions in summer 2021 compared to in a pre-pandemic summer season. This is a substantial underestimate, particularly as they present virological surveillance data indicating 500-1300% higher RSV circulation in summer 2021 relative to pre-pandemic summers.

The methods used by Bardsley et al leads to incorrect inferences regarding the RSV hospital burden in children. Referencing our paper as a justification for their chosen methodology is misleading readers.

