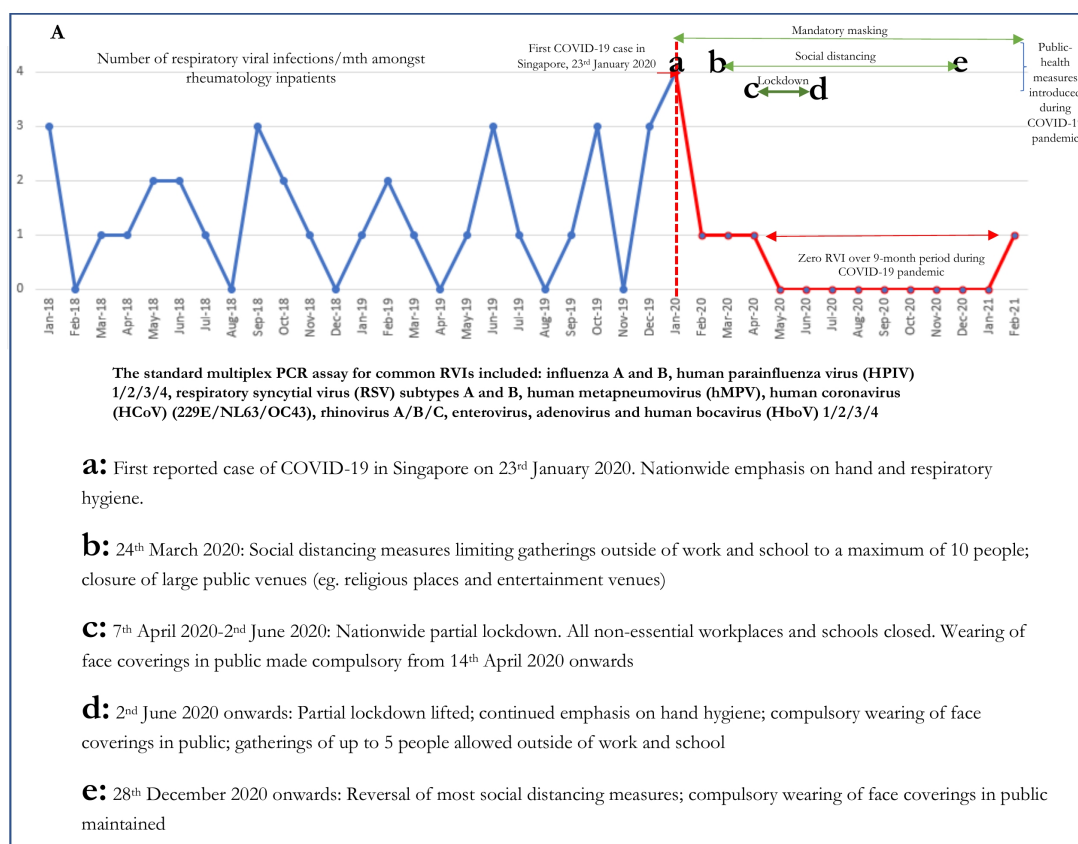


## Correspondence on 'Impact of the COVID-19 pandemic on morbidity and mortality in patients with inflammatory joint diseases and in the general population: a nationwide Swedish cohort study'

We read with interest the article by Bower *et al* detailing the impact of the COVID-19 pandemic on mortality and morbidity among patients with rheumatic diseases (RDs).<sup>1</sup> Though Bower *et al* reported that the risks of severe COVID-19-related outcomes among patients with RD, such as increased risk of hospitalisation and death, were largely proportionate to those in the general population and explained by comorbidities, risks of severe COVID-19-related outcomes were still increased among patients with RD.<sup>1</sup> Indeed, in a separate cohort of inpatients with systemic lupus erythematosus and concomitant SARS-CoV-2 infection, almost one-fifth required intensive care unit admission.<sup>2</sup> Outside the pandemic setting, however, common respiratory viral infections (RVIs), including influenza, still remain a significant cause of morbidity and mortality among patients with RD. Increased influenza incidence has been reported among patients with RD,<sup>3</sup> and various anti-RD therapies are associated with increased frequency of RVIs.<sup>4</sup> Public health measures, such as influenza vaccination, are hence recommended for RVI prevention in patients with RD,<sup>5</sup> though most RVIs are not vaccine-preventable. The COVID-19 pandemic provided the impetus for introduction of unprecedented, community-wide public health measures targeted against SARS-CoV-2 transmission. Such measures may also potentially reduce transmission of

common RVIs among vulnerable populations, including patients with RD.

In Singapore, a Southeast Asian city state, various public health interventions, including universal masking and social distancing, were implemented from February 2020 onwards.<sup>6</sup> Given the success of these measures in limiting community transmission, lockdown measures implemented in April 2020 were lifted by June 2020, with the reversal of most social-distancing measures by December 2020. However, compulsory mask wearing in public continues to be maintained. At our institution, the largest tertiary hospital, community containment of COVID-19 meant that services were fortunately not overwhelmed, unlike other centres that experienced closure of rheumatology services as part of SARS-CoV-2 containment, with patients postponing care due to fear of transmission.<sup>7</sup> Inpatient rheumatology services continued throughout the pandemic, with telemedicine augmenting outpatient consults.<sup>8</sup> We evaluated trends in concomitant RVIs among inpatient rheumatology admissions over an unbroken 1-year period during the pandemic, compared with the preceding 2 years. From January 2018 to February 2021, all rheumatology admissions with a PCR-proven RVI in the same admission were identified. Pre-pandemic, patients with symptoms of upper respiratory tract infection (URTI) had samples tested for 16 common RVIs (including influenza) via multiplex PCR. During the pandemic, all inpatients with URTI were additionally tested for SARS-CoV-2 as well as common RVIs as part of our institution's containment strategy for COVID-19.<sup>9</sup> The rates of admissions with PCR-proven RVI prepandemic and postpandemic were compared using the incidence rate ratio method.



**Figure 1** Rates of RVIs among rheumatology inpatients at a Singaporean tertiary hospital, before and during the COVID-19 pandemic. RVI, respiratory viral infection.

We observed a significant and sustained reduction in concomitant RVIs among rheumatology admissions during the pandemic (figure 1). The incidence rate of PCR-proven RVI was 4.7 cases per 1000 admissions (4 cases and 851 admissions) during the pandemic, compared with 24.1 cases per 1000 admissions pre-pandemic (36 cases and 1494 admissions); the decline was statistically significant (incidence rate ratio=0.19, 95% CI=0.05 to 0.54,  $p=0.005$ ). Influenza accounted for a minority of PCR-proven RVI (17.5%, 7/40). This remarkable decline was noted despite increased testing, likely due to heightened vigilance for respiratory symptoms. While almost one-third (26.1%, 222/851) of admissions were tested for RVIs, pre-pandemic, only 15.3% (229/1494) of admissions were correspondingly tested (OR=1.94, 95% CI=1.58 to 2.40,  $p<0.001$ ). Over a 9-month period from May 2020 to January 2021, zero RVI was encountered among rheumatology inpatients, an observation unprecedented in the preceding 2 years. During the pandemic, no patients with RD on follow-up at our institution developed COVID-19.

A sustained reduction in admissions with PCR-proven RVIs among patients with RD coincided with widespread adoption of public health measures during a pandemic, including universal masking and social distancing. These reductions were sustained for more than 6 months after the lifting of lockdown and persisted even after the reversal of most social-distancing measures. While the single-centre nature of our observations restricts generalisability, the complementary role of simple preventive measures such as wearing of face coverings and social distancing in mitigating RVIs among those living with RD and in receipt of immunosuppression deserves further investigation, particularly as a majority of RVIs observed were not vaccine-preventable.

Liang En Wee ,<sup>1</sup> Edwin Philip Conceicao,<sup>2</sup> Jing Yuan Tan,<sup>3</sup> Julian Thumboo,<sup>4</sup> Indumathi Venkatachalam<sup>1,2</sup>

<sup>1</sup>Infectious Diseases, Singapore General Hospital, Singapore

<sup>2</sup>Infection Prevention and Epidemiology, Singapore General Hospital, Singapore

<sup>3</sup>Internal Medicine, Singapore General Hospital, Singapore

<sup>4</sup>Department of Rheumatology and Immunology, Singapore General Hospital, Singapore

**Correspondence to** Dr Liang En Wee, Infectious Diseases, Singapore General Hospital, Singapore, Singapore; ian.wee@mohh.com.sg

**Contributors** Concept and design: IW; analysis of data: IW and EPC; drafting of manuscript: IW, JYT, JT and IV; supervision: IV

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not required.

**Ethics approval** As this study used aggregated, anonymised data collected as part of routine surveillance, waiver of informed consent was obtained from our hospital's institutional review board.

**Provenance and peer review** Not commissioned; internally peer reviewed.

© Author(s) (or their employer(s)) 2023. No commercial re-use. See rights and permissions. Published by BMJ on behalf of EULAR.



**To cite** Wee LE, Conceicao EP, Tan JY, et al. *Ann Rheum Dis* 2023;**82**:e223.

Received 30 March 2021

Accepted 31 March 2021

Published Online First 9 April 2021

*Ann Rheum Dis* 2023;**82**:e223. doi:10.1136/annrheumdis-2021-220462

**ORCID iD**

Liang En Wee <http://orcid.org/0000-0001-6428-9999>

## REFERENCES

- 1 Bower H, Frisell T, Di Giuseppe D, et al. Impact of the COVID-19 pandemic on morbidity and mortality in patients with inflammatory joint diseases and in the general population: a nationwide Swedish cohort study. *Ann Rheum Dis* 2021;**80**:1086–93.
- 2 Mageau A, Aldebert G, Van Gysel D, et al. SARS-Cov-2 infection among Inpatients with systemic lupus erythematosus in France: a nationwide Epidemiological study. *Ann Rheum Dis* 2021;**80**:1101–2.
- 3 Furer V, Rondaan C, Heijstek M, et al. Incidence and prevalence of vaccine preventable infections in adult patients with autoimmune inflammatory rheumatic diseases (AIIRD): a systemic literature review Informing the 2019 update of the EULAR recommendations for vaccination in adult patients with AIIRD. *RMD Open* 2019;**5**:e001041.
- 4 Kilian A, Chock YP, Huang IJ, et al. Acute respiratory viral adverse events during use of antirheumatic disease therapies: a scoping review. *Semin Arthritis Rheum* 2020;**50**:1191–201.
- 5 Furer V, Rondaan C, Heijstek MW, et al. 2019 update of EULAR recommendations for vaccination in adult patients with autoimmune inflammatory rheumatic diseases. *Ann Rheum Dis* 2020;**79**:39–52.
- 6 Tan JY, Conceicao EP, Sim XYJ, et al. Public health measures during COVID-19 pandemic reduced hospital admissions for community respiratory viral infections. *J Hosp Infect* 2020;**106**:387–9.
- 7 DeJaco C, Alunno A, Bijlsma JW, et al. Influence of COVID-19 pandemic on decisions for the management of people with inflammatory rheumatic and musculoskeletal diseases: a survey among EULAR countries. *Ann Rheum Dis* 2021;**80**:518–26.
- 8 Chew LC, Yeo SI, Thumboo J. The impact of the Off-site monitoring clinic (virtual monitoring clinic) on the practice of outpatient rheumatology in a tertiary centre during the COVID-19 pandemic. *Ann Acad Med Singap* 2020;**49**:905–8.
- 9 Wee LE, Venkatachalam I, Sim XYJ, et al. Containment of COVID-19 and reduction in healthcare-associated respiratory viral infections through a multi-tiered infection control strategy. *Infect Dis Health* 2020. doi:10.1016/j.idh.2020.11.004. [Epub ahead of print: 16 Nov 2020].