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.

kidney disorders. Reactions were serious in 301 (92.0%) cases, with a fatal outcome for 15 (4.6%) patients. They were mainly AKI in 295 (90.2%) cases and tubular necrosis in 8 (2.4%) cases.

Compared with the use of chloroquine, hydroxychloroquine, dexamethasone, sarilumab, or tocilizumab, the use of remdesivir was associated with an increased reporting of kidney disorders (reporting odds ratio, 7.2; 95% confidence interval, 5.7–9.0) (Table 1).

The retrospective design of our pharmacovigilance analysis has several limitations, especially underreporting and residual confounders, including the role of COVID-19 in AKI occurrence. Nevertheless, sensitivity analyses showed similar results, especially when excluding other nephrotoxic drugs or when comparing with only drugs used in severe to critical COVID-19.

Our findings, based on postmarketing real-life data from >5000 COVID-19 patients, support that kidney disorders, almost exclusively AKI, represent a serious, early, and potentially fatal adverse drug reaction of remdesivir. These results are consistent with findings from another group.[4] Physicians should be aware of this potential risk and perform close kidney monitoring when prescribing remdesivir. Further data are needed to confirm that safety signal.

ACKNOWLEDGMENTS

Information from VigiBase comes from a variety of sources, and the probability that the suspected adverse effect is drug related is not the same in all cases. The information does not represent the opinion of the Uppsala Monitoring Center or the World Health Organization and only reflects the authors' opinion.

VigiBase is a fully deidentified database maintained by the Uppsala Monitoring Center. According to VigiBase access rules, no specific ethical approval is needed. VigiBase access is granted to national and regional pharmacovigilance centers, such our teams. Data sharing: aggregated data of spontaneous reports are available at http://www.vigiaccess.org/.

The corresponding author attests that this article is an honest, accurate, and transparent account of the study being reported; and that no important aspects of the study have been omitted.

AUTHOR CONTRIBUTIONS

LC and FM designed the study and drafted the article. LC performed data extraction and statistical analysis. LHP, MT, BT, and JMT critically reviewed the article. All the authors approved the final version of the article. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

SUPPLEMENTARY MATERIAL

Supplementary File (PDF)

Table S1. Characteristics of kidney disorder cases reported with remdesivir in COVID-19 patients within the WHO global safety database.

Supplementary Data S2. List of MedDRA terms used to identify COVID-19 patients in drug indication.

Supplementary Data S3. Concomitant or suspected nephrotoxic drugs identified in kidney disorders cases reported with remdesivir.

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Kidney International (2021) **99,** 1235–1236; https://doi.org/10.1016/j.kint.2021.02.015

Zero health care–associated respiratory viral infections: impact of enhanced infection prevention on a renal unit during the coronavirus disease 2019 pandemic

To the editor We read with interest the study by Thaunat *et al.* that identified significant excess mortality attributed to coronavirus disease 2019 (COVID-19) among dialysis patients.[1] Indeed, the COVID-19 pandemic has provided the impetus for the introduction of strategies to optimize protection of hemodialysis patients from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[2] Outside the pandemic setting, however, patients with chronic kidney disease have significantly higher risk of nosocomial acquisition of other common respiratory-viral infections (RVIs), with increased mortality and length-of-stay.[3] Implementation of protective strategies against COVID-19 on renal units may reduce health care–associated-RVI (HA-RVI) as a positive consequence.

From January to December 2020, a COVID-19 containment strategy was implemented at the largest tertiary hospital

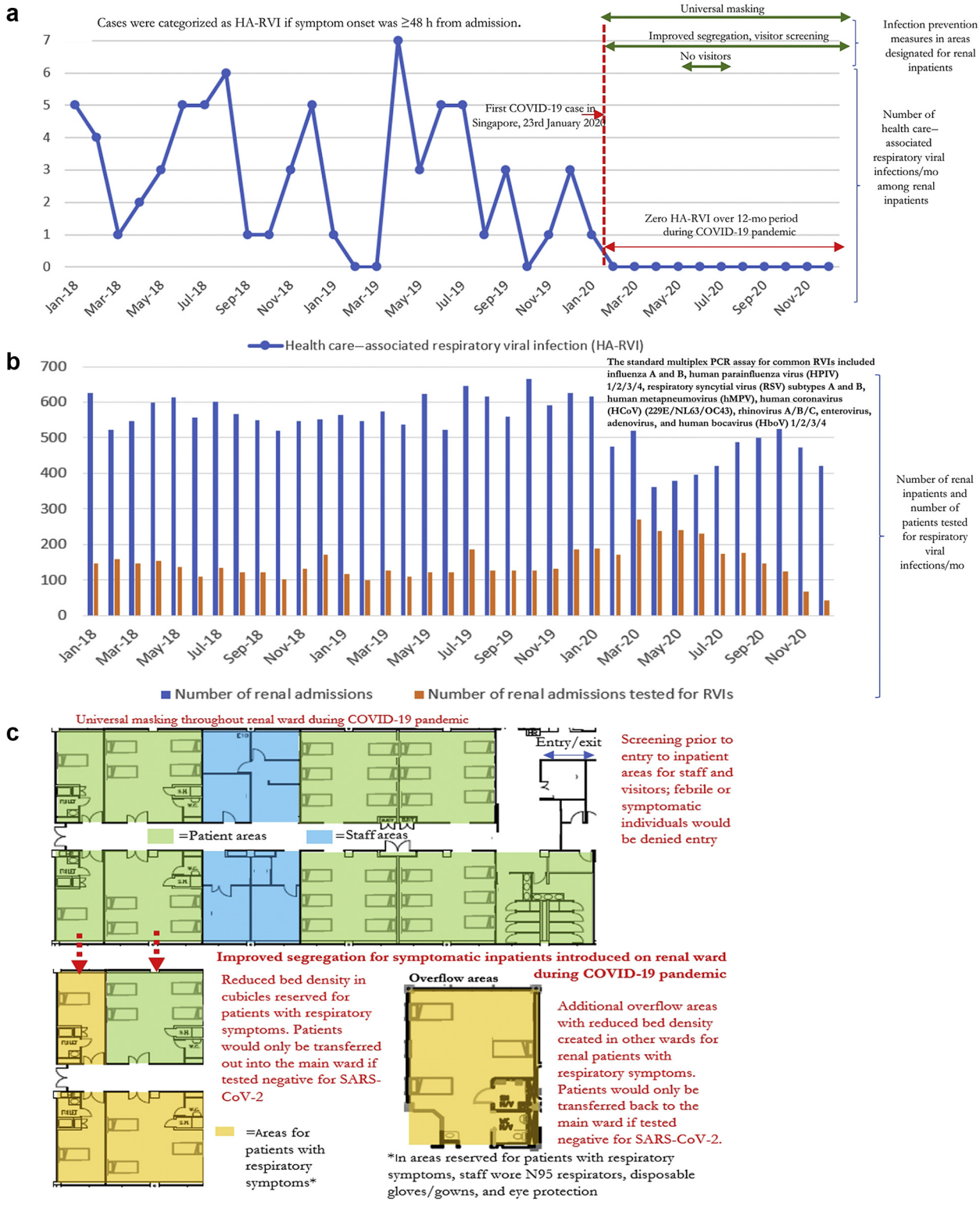

Figure 1 | Rates of health care–associated respiratory viral infections (HA-RVIs) among renal inpatients at a Singaporean tertiary hospital, before and during coronavirus disease 2019 (COVID-19) pandemic. (**a**) Trends in HA-RVIs among renal inpatients (January 2018–December 2020). (**b**) Number of renal inpatients and number of patients tested for respiratory viral infections (RVIs) at a Singaporean tertiary hospital (January 2018–December 2020). (**c**) Layout of renal inpatient unit and enhanced infection prevention measures introduced during the COVID-19 pandemic. PCR, polymerase chain reaction; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

in Singapore, with a 20-station inpatient dialysis center, a large renal inpatient service, and a renal transplant program. Universal masking and visitor screening were implemented[4]; symptomatic patients were segregated in a dedicated dialysis room, with staff using personal protective equipment. All symptomatic inpatients were tested for SARS-CoV-2 and common RVIs via multiplex polymerase chain reaction.

The incidence of HA-RVI during the pandemic dramatically decreased to 0.5 cases per 1000 admissions (1 case, 2186 admissions), compared with 21.7 cases per 1000 admissions (70 cases, 3223 admissions) over the previous 2 years (incidence rate ratio, 0.02; 95% confidence interval, 0.001–0.13; $P < 0.001$). Notably, zero episodes of HA-RVI were recorded from February to December 2020 (Figure 1). There was no significant difference in the proportion of inpatients tested for common RVIs (26.5%, 581 of 2186 admissions tested during the pandemic; vs. 28.8%, 929 of 3223 admissions tested prepandemic; odds ratio, 0.89; 95% confidence interval, 0.77–1.08; $P = 0.07$). Despite managing ≥1600 COVID-19 cases, there was no nosocomial acquisition. Infection prevention measures introduced for COVID-19 mitigate HA-RVI among renal inpatients and should be continued postpandemic.

ACKNOWLEDGMENTS

As this study utilized aggregated anonymized data collected as part of routine surveillance, waiver of informed consent was obtained from our hospital's institutional review board.

AUTHOR CONTRIBUTIONS

WLE conceived and designed the study. WLE and EPC analyzed the data. WLE, CST, and IV drafted the manuscript. CST and IV supervised.

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Kidney International (2021) **99,** 1236–1238; https://doi.org/10.1016/j.kint.2021.02.020

Answering the call to action: rapid implementation of an in-center hemodialysis SARS-CoV-2 vaccination program

To the editor: The coronavirus pandemic resulted in devastatingly high rates of infection and mortality (up to 20% and 32%, respectively) for patients receiving in-center hemodialysis (ICHD).[1] The arrival of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccines was anxiously awaited. Large trials reported vaccine efficacy of 62% to 95%.[2,3] Data from other vaccines suggested benefit in kidney patients, despite attenuated immune responses.[4] Given the devastating toll of coronavirus disease 2019 (COVID-19), and the kidney community's call to action,[1] we advocated for urgent provision of SARS-CoV-2 vaccines for patients receiving ICHD.

Patients receiving ICHD spend significant time on and traveling to dialysis; it is unfair and impractical for them to attend vaccination hubs separate from dialysis. A vaccine delivery group was formed to coordinate procurement, logistics, and delivery of SARS-CoV-2 vaccines on dialysis. This group comprised volunteers (nephrologists, nurses, and pharmacists) undertaking this work in addition to their clinical responsibilities. Each vaccinator completed mandatory vaccination e-Learning.

The Joint Committee on Vaccination and Immunisation granted permission to vaccinate a cohort of patients receiving ICHD ahead of the government schedule, provided we measured their immune responses. Once a limited number of vaccines were sourced from a community vaccination hub adjacent to a satellite dialysis center, the vaccine roll-out was piloted. Twenty-four hours later, the vaccination team assembled in the selected satellite dialysis unit and offered the vaccine to all patients attending the morning, afternoon, and twilight shifts. Crucially patients had already received verbal and written vaccine information. All patients were seen by a pair of vaccinators. Patients were screened for the presence of COVID-19 symptoms, receipt of other vaccines in the preceding 7 days, allergies, use of anticoagulants, pregnancy, and previous SARS-CoV-2 vaccination. A concerted effort was made to avoid vaccine wastage. Vaccines were administered while the patients were on the dialysis machine. As most patients had anticoagulation on dialysis, pressure was applied to the injection site for 2 minutes and patients were