Remdesivir Reduces Readmission in Immunocompromised Adult Patients Hospitalised With COVID-19

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Disclosures

- Funding: this research is funded by Gilead Sciences, Inc.
- Conflicts of interest: **EL**, **RSG**, **MB**, **GB**, **MA**, and **AC** are full-time employees of and/or hold stocks/shares of Gilead Sciences, Inc.

Background and Objective

— Despite major advances in COVID-19 management, immunocompromised individuals may be vulnerable to prolonged and severe COVID-19 outcomes due to their vulnerability to infection and lower vaccine immunogenicity and efficacy[1]
  - Immunocompromised populations appear to be at a higher risk of disease progression with COVID-19[2-3]

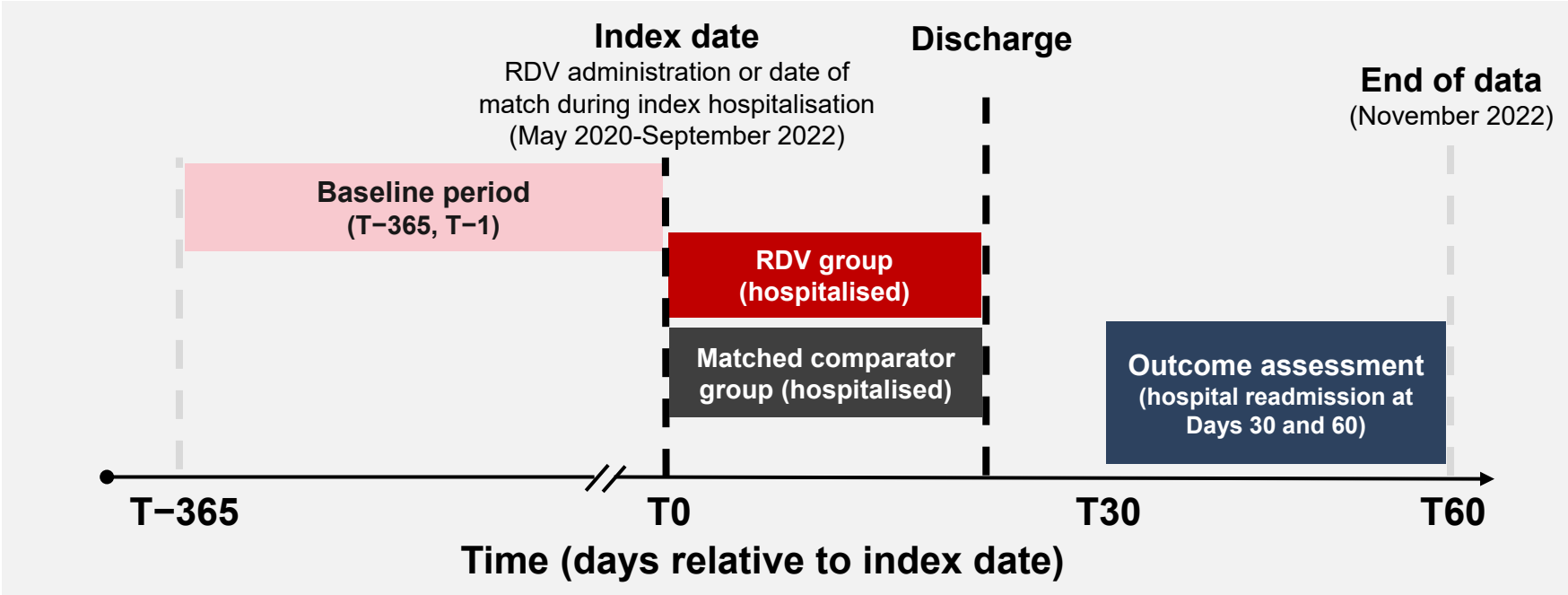
— Remdesivir (RDV) is a broad-spectrum antiviral agent with demonstrated efficacy in the treatment of COVID-19 (PINETREE, ACTT-1, SIMPLE trials)[4-7]
  - However, evidence of the effectiveness of RDV in immunocompromised patients is limited

— Objective: to estimate hospital readmissions for any cause after index hospitalisation with a COVID-19 diagnosis in immunocompromised patients who were and were not administered RDV

1. Sun J, et al. *JAMA Intern Med*. 2022;182(2):153-162. 2. MacKenna B, et al. *Lancet Rheumatol*. 2022;4(7):e490-e506. 3. Song Q, et al. *J Clin Oncol*. 2022;40(13):1414-1427. 4. Hill J, et al. Presented at: IDWeek; 29 September-3 October 2021; Virtual. Oral LB-1. 5. Beigel JH, et al. *N Eng J Med*. 2020;383(19):1813-1826. 6. Goldman JD, et al. *N Engl J Med*. 2020;383(19):1827-1837. 7. Spinner CD, et al. *JAMA*. 2020;324(11):1048-1057.

Study Design

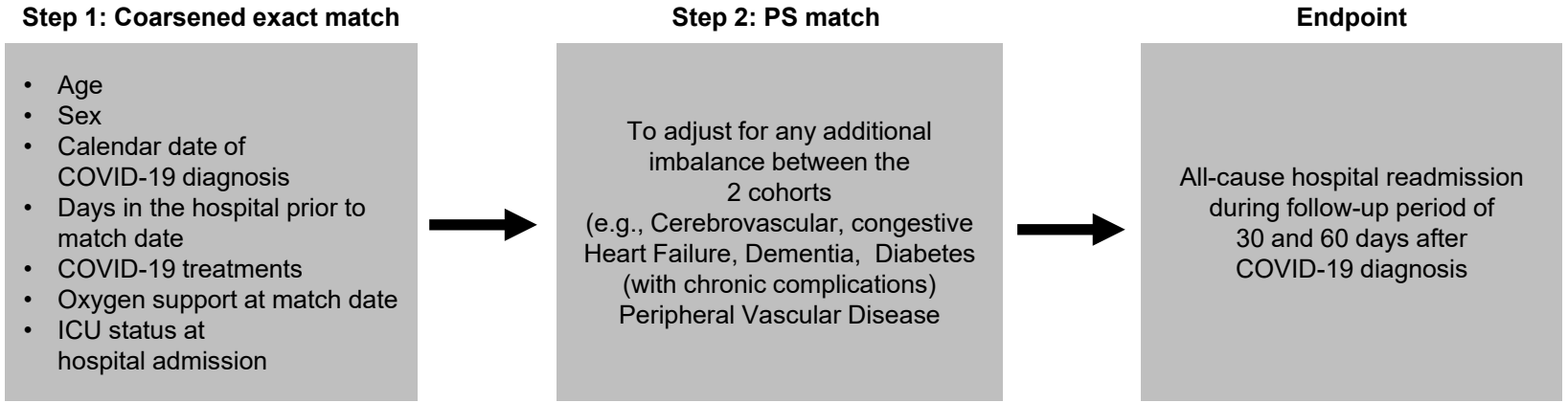
- RDV group: patients who received ≥1 dose at any time during the index hospitalisation
- Comparator group: patients who did not receive RDV up to the matched date



RDV, remdesivir; T, index date.

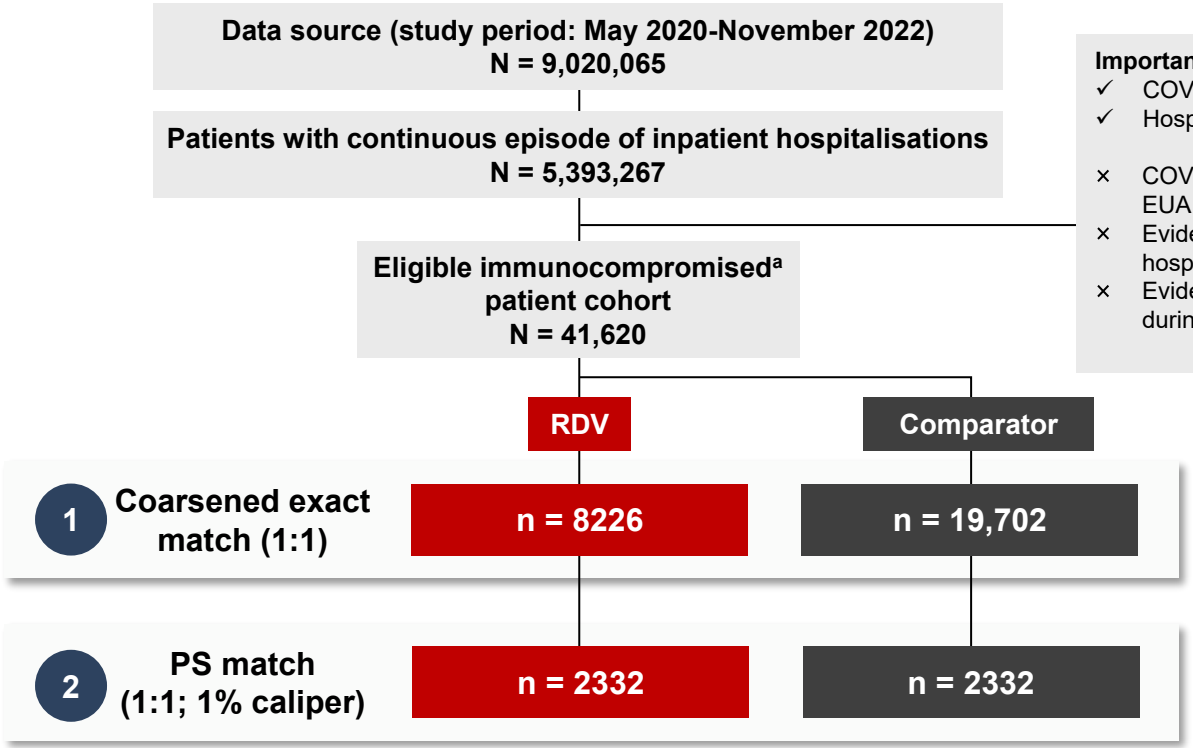
Methods

- Among the eligible patients, a 2-step approach was used to achieve balance in the baseline characteristics
- To evaluate the outcome (ie, all-cause readmission rate at 30 and 60 days after index hospitalisation):
  - Cox proportional hazard models were applied to the PS-matched cohorts to estimate HRs and 95% CIs



PS, propensity score; HR, hazard ratio; CI, confidence interval; ICU, intensive care unit.

Patient Disposition



Important exclusion/inclusion criteria:

- ✓ COVID-19 diagnosis within the study period
- ✓ Hospital admission related to COVID-19 diagnosis
- × COVID-19 hospitalisation or use of RDV prior to RDV EUA
- × Evidence of pregnancy during the index hospitalisation
- × Evidence of clinical trial participation at any time during hospitalisation

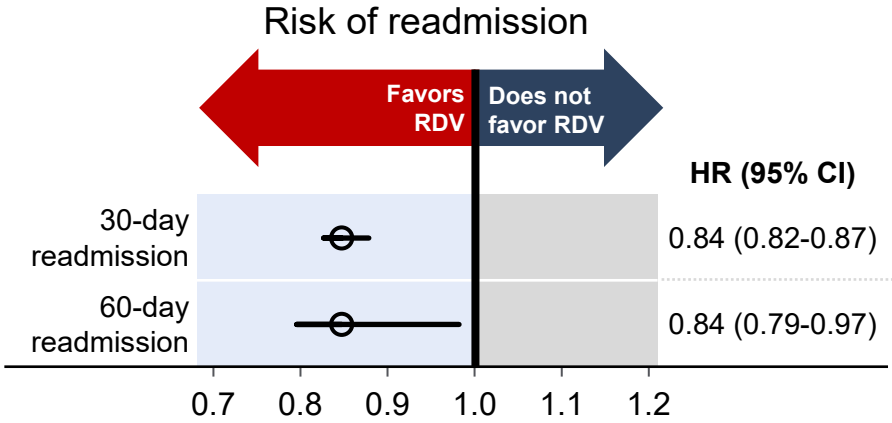
RDV, remdesivir; EUA, emergency use authorisation; PS, propensity score.
[a]≥1 immunocompromised condition during the past 12 months (eg, symptomatic HIV infection, haematologic and solid malignancy, organ transplant, rheumatologic/inflammatory, or other immune conditions).[1]
1. Patel M, et al. *Emerg Infect Dis.* 2020;26(8):1720-1730.

Baseline Demographic and Clinical Characteristics for Matched Cohorts

Baseline demographic and clinical characteristics	Coarsened exact match		PS match	
	RDV n = 8226	Comparator n = 19,702	RDV n = 2332	Comparator n = 2332
Mean age at COVID-19 diagnosis, years (SD)	63.1 (15.5)	64.8 (15.3)	61.5 (14.9)	61.6 (14.8)
Diabetes with chronic complications, n (%)	2242 (27.3%)	6645 (33.7%)	286 (12.3%)	265 (11.4%)
Hypertension with complications or secondary hypertension, n (%)	2804 (34.1%)	8577 (43.5%)	312 (13.4%)	305 (13.1%)
Chronic neurological conditions, n (%)	4672 (56.8%)	12,557 (63.7%)	995 (42.7%)	987 (42.3%)
ICU care received, n (%)	4352 (52.9%)	9454 (48.0%)	926 (39.7%)	927 (39.8%)
Mean no. of days in ICU, days (SD)	10.8 (11.2)	10.4 (13.6)	0.5 (0.7)	0.5 (1.0)
Mean CCI score (365-day lookback; SD)	3.4 (3.0)	4.2 (3.3)	1.7 (2.2)	1.6 (2.2)

PS, propensity score; RDV, remdesivir; SD, standard deviation; ICU, intensive care unit; CCI, Charlson Comorbidity Index.

Results: 30- and 60-day All-cause Readmission in the Overall Cohort



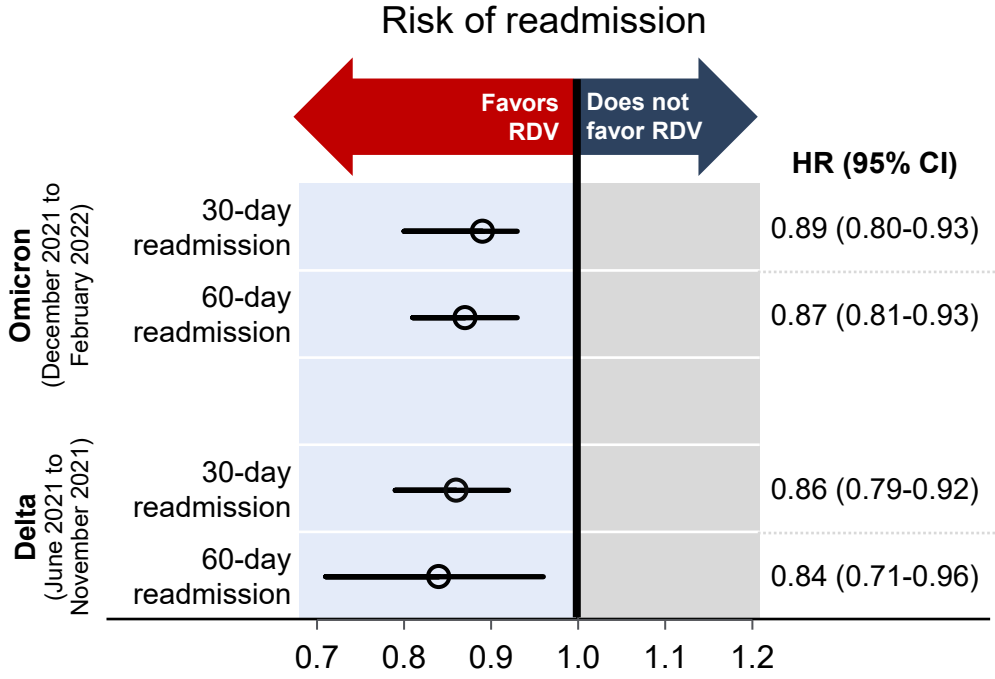
Rate of readmission per PY

	RDV n = 2332		Comparator n = 2332	
	Events	Rate (per 10 PYs)	Events	Rate (per 10 PYs)
30-day readmission	1572	234.6	1722	351.4
60-day readmission	1614	134.5	1762	200.2

— RDV was associated with a statistically significant reduction in 30- and 60-day all-cause readmission rates in patients hospitalised with COVID-19

RDV, remdesivir; HR, hazard ratio; CI, confidence interval; PY, patient-year.

Results: 30- and 60-day All-cause Readmission Across Variants



Rate of readmission per PY

	RDV n = 2332		Comparator n = 2332	
	Events	Rate (per 10 PY)	Events	Rate (per 10 PY)
Omicron (December 2021 to February 2022)				
30-day readmission	222	277.5	234	334.2
60-day readmission	230	164.2	239	199.1
Delta (June 2021 to November 2021)				
30-day readmission	322	268.3	349	387.7
60-day readmission	324	147.2	357	223.1

— RDV was associated with a statistically significant reduction in 30- and 60-day all-cause readmission rates in patients hospitalised with COVID-19 across the Delta and Omicron variants

RDV, remdesivir; HR, hazard ratio; CI, confidence interval; PY, patient-year.

Limitations

- Secondary use of data may introduce data entry errors (information bias or measurement error) at the point of care, which can neither be detected nor corrected for during analyses
- Inability to attribute causation
- RDV-exposed hospitalised patients were not included in the analysis if a corresponding control patient could not be identified for coarsened exact matching or PS matching
- Due to the real-world nature of the dataset, it was difficult to capture detailed data, such as laboratory measurements and granular changes in supplemental oxygen
- Despite the methods used, there may be residual/unmeasured confounding

RDV, remdesivir; PS, propensity score.

Conclusion and Future Direction

- In this analysis using real-world data, immunocompromised individuals with COVID-19 who were treated with RDV during their index hospitalisation showed a 16% reduction in the risk of hospital readmission at 30 and 60 days relative to similar individuals not treated with RDV
- As the next steps, we plan to:
  - Evaluate the association of RDV with other outcomes, such as inpatient mortality and disease progression
  - Investigate the longer-term association of RDV in this patient population
  - Categorise the immunocompromised definition by severe and moderate conditions

In an immunocompromised cohort that is at a higher risk for COVID-19 progression and mortality, treatment with RDV reduces long-term negative outcomes, such as readmission

RDV, remdesivir.

Thank you