Remdesivir reduces mortality in immunocompromised patients hospitalized for COVID-19

Eassy Mozaffari, Aatha Chakravarty, Robert L Gottlieb, Andre C Kallil, Stephanie H Read, Heng Jiang, Mel Chiang, EunYoung Lee, Rikisha Gupta, Mark Thrun, Chidimna Chima-Melton

1Gilead Sciences, Foster City, CA; 2Cartera, New York, NY; 3Baylor Scott and White Research Institute, Dallas, TX; 4University of Nebraska Medical Center, Omaha, NE; 5Cartera, London, UK; 6Cartera, Paris, France; 7Gilead Sciences, Taipei, Taiwan; 8JULIA HealthCare, Torrance, CA

**Results (cont’d)**

- Post-matching balance was achieved across groups with different baseline supplemental oxygen and VOC periods with all covariates with a standardized difference absolute value of <0.15.
- In the matched cohort, 59% were 65 years or older, 40% with NSOc, 39% received LFO, 19% received HFO/NIV and 2% IMV/ECMO at baseline (Table 2).

#### Table 2: Baseline characteristics before and after matching

<table>
<thead>
<tr>
<th>Age group</th>
<th>Baseline (n=19,184)</th>
<th>Post-matching (n=14,169)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;65</td>
<td>17.1%</td>
<td>17.1%</td>
</tr>
<tr>
<td>65+</td>
<td>82.9%</td>
<td>82.9%</td>
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</tbody>
</table>

- Matched cohort: 14,169 patients.
  - Post-matching balance was achieved across groups with different baseline supplemental oxygen use.
  - RDV treatment within 2 days of admission in 14% of patients, 14% of patients treated post-90 days.
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**Conclusions**

- Remdesivir reduced mortality in a matched cohort of immunocompromised patients hospitalized for COVID-19, especially when administered in the first 2 days of admission.
- Compared to non-RDV groups, patients treated with RDV had significantly lower mortality risk (hazard ratio: 0.79 [95% CI: 0.66, 0.95]; p = 0.0035).
- RDV was associated with a 21% decrease in mortality risk compared to non-RDV patients in the matched cohort (hazard ratio: 0.79 [95% CI: 0.66, 0.95]; p = 0.0035).

**References**

4. Aastha Chandak, Robert L Gottlieb, Ottawa, ON; Robert L Gottlieb, Gilead Sciences, Inc.; Robert L Gottlieb, Tel: (650) 522-6500, Fax: (650) 522-5280

**Figure 1**

Matching conducted separately in the 12 cohorts (3 VOC periods x 4 baseline supplemental oxygen) using:

- 1:1 Preferential Same-Hospital Matching with replacement (PS matching including 2ir, 6ir, 12ir, 24ir, 48ir, 96ir, 192ir, 384ir, 1728ir, 3456ir, 6912ir, and 13824ir.

| Table 1. Study design

| Study Population
| Source: 171,123 immunocompromised adults hospitalized in 189 hospitals with a primary discharge diagnosis of COVID-19 during Dec 2020-Apr 2022.
| After applying inclusion/exclusion criteria, 30,397 patients from 755 hospitals included in the analysis:
| 19,184 patients were treated with RDV in the first two days of hospitalization
| 11,215 patients were not treated with RDV
| After 1:1 matching with replacement (Figure 1), 14,169 RDV patients matched with 5,341 unique non-RDV patients (equivalent to 14,169 non-RDV patients based on matching with replacement)

- Baseline (n=19,184) vs Post-matching (n=14,169) comparison:
  - RDV treatment within 2 days of admission in 14% of patients (n=3,304), 14% of patients treated post-90 days.

**Table 2: Baseline characteristics before and after matching**

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- All baseline variables (supplemental oxygen, concomitant medications) were examined within the first two days of hospitalization.
- Hospital Endpoints: Overall mortality: 14-day and 28-day all-cause mortality (defined as a discharge status of "expired" or " hospice").
- VOC periods: Pre-Plea (Dec 2020-Apr 2021), Delta (May 2021-Apr 2022) defined based on the dominant variables during these time periods.

**Statistical analysis**

- Stratified analyses were conducted throughout for 12 cohorts (3 variant time periods x 4 baseline supplemental oxygen use). LFO: low-flow oxygen (LFO), HFO: high-flow intravenous oxygen (HFO/NIV), and invasive mechanical ventilation/extracorporeal membrane oxygenation (IMV/ECMO).
- Propensity scores were estimated using separate logistic regression models for the different baseline supplemental oxygen use (NSOc, LFO, HFO/NIV, and IMV/ECMO) with RDV use within first 2 days of admission as the outcome and key baseline and clinical factors as covariates.
- Covariates used in PS calculation: Baseline demographics (sex, age, race, ethnicity, primary payer), comorbidities (diabetes, COPD, CHF, obesity, cancer, immunocompromised condition), hospital characteristics (bed size, urban/rural, teaching, region of the hospital), admission month, admission from an outside facility (NFSF), intensive care unit (ICU), length of stay at baseline, severity level at baseline, duration of hospitalization at baseline, specific diagnostic codes at admission (respiratory failure, hypoxemia, sepsis), concomitant medications at baseline (corticosteroids, corticosteroids, immunosuppressants, prophylactic antibiotics).
- PS-Matching was conducted as specified in Figure 1
- Cox Proportional Hazards Model (adjusted for hospital-level random effects and key clinical covariates) was used to examine time to 14- and 28-day mortality outcomes.
- Patients who did not have the outcome of interest or who were discharged alive were censored at 14 and 28 days in the analysis.

**Results**

- After applying inclusion/exclusion criteria, 30,397 patients from 755 hospitals included in the analysis:
- 19,184 patients were treated with RDV in the first two days of hospitalization
- 11,215 patients were not treated with RDV
- After 1:1 matching with replacement (Figure 1), 14,169 RDV patients matched with 5,341 unique non-RDV patients (equivalent to 14,169 non-RDV patients based on matching with replacement).

**Unadjusted analysis (PS-matched cohort)**

- During Dec 2020-Apr 2022, unadjusted mortality rate was significantly lower for RDV patients compared to patients that did not receive RDV (log rank test: p<0.005) (Figure 2).
- Lower mortality rate observed across all VOC periods (log rank test: p<0.05) (Figure 2).

**Adjusted analysis (PS-matched cohort)**

- After adjusting for baseline and clinical covariates, 14-day and 28-day results showed that RDV had significantly lower mortality risk compared to non-RDV in VOC periods (Figure 4).
- RDV had significantly lower mortality risk compared to non-RDV in subgroups of patients on "no room air" NSOc and those on supplemental oxygen, as sufficient sample size was available.
- Sample sizes in the HFO (n=432) and IMV/ECMO (n=434) subgroups were not sufficient to perform robust statistical analyses.
- Overall constant results favoring RDV were observed.

**Figure 2**

Kaplan-Meier curves

**Figure 3**

14- and 26-day mortality in immunocompromised patients across the COVID-19 variant periods (adjusted Cox Proportional Hazards model)