

Burden of Influenza and Antiviral Treatments in Cardiovascular Disease Patients

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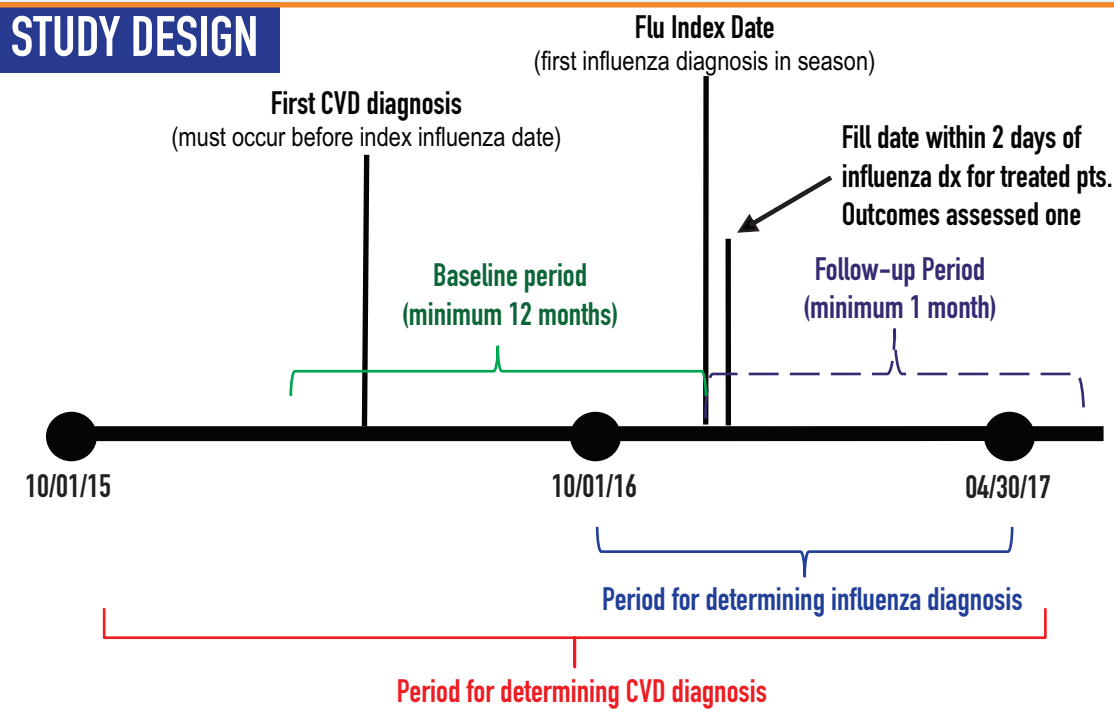
PURPOSE

Patients with cardiovascular disease (CVD) are at higher risk of influenza complications. Underlying CVD is also associated with an increased risk of complications following viral respiratory infections, including increased morbidity, mortality, and health care utilization. These phenomena are observed with seasonal influenza. This study explored whether CVD patients who contract influenza and take antiviral medication suffer fewer influenza-related complications and overall healthcare resource utilization (HRU) than those who were untreated.

METHODS

- A retrospective claims analysis in patients with CVD by influenza season in the U.S. (October to April of following year) using data from IBM Watson MarketScan.
- Study period was 2015–20 (Encompasses 3 influenza seasons: 2016–17, 2017–18, 2018–19). Cases (treated) were patients who received antiviral influenza treatment within 2 days of index influenza diagnosis. Patients who received prophylactic antiviral influenza treatment with day supply 10 days or greater as their index treatment, and patients who were hospitalized between index flu and flu Rx fill date, were excluded.
- Controls (untreated) were patients who did not receive any antiviral influenza treatment in the 30 days postindex influenza diagnosis. Patients who were hospitalized between index influenza and 2 days postindex were excluded.

STUDY DESIGN



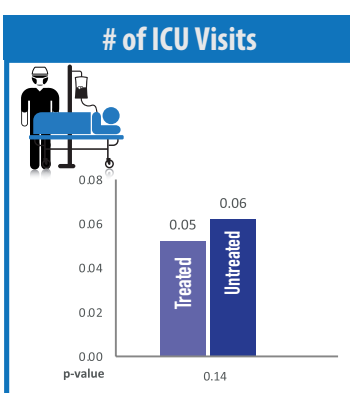
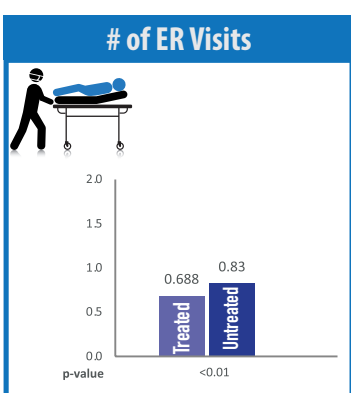
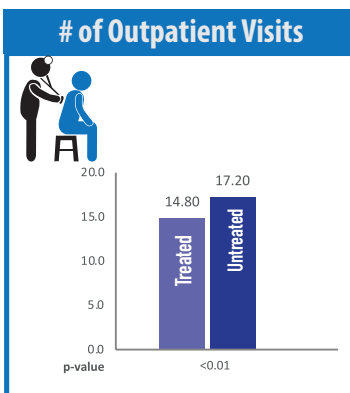
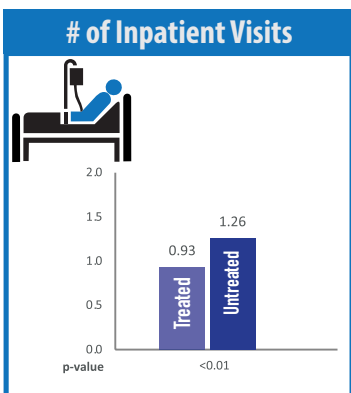
CVD patients were selected for each influenza season during a 2-year time period: The year prior and up to the end of the flu season (e.g., for the influenza season 2016–17, CVD patients are selected using 1+ inpatient/2+ outpatients 30 days apart during October 2015–April 2017).

- Propensity score matching was used, matching treated vs untreated patients. Treated and untreated CVD-influenza patients were propensity score matched 1:1 (case:control), with nearest neighbor matching (without replacement). This included an exact match on CVD flag(s). Propensity scores were based on CVD condition(s), chronic lung disease, age at influenza diagnosis, sex, region, health plan, month/year of influenza diagnosis, baseline influenza diagnosis, and baseline inpatient/outpatient/emergency room (ER) visit.
- Covariates were identified during 12-month baseline period. They included Charlson comorbidity index (CCI), age at index, sex, plan type, region, and influenza index month/year; CVD conditions (according to definition in patient selection); flags for influenza diagnosis in baseline period (J9-J11); and evidence of chronic lung disease during baseline period (flag as yes/no).

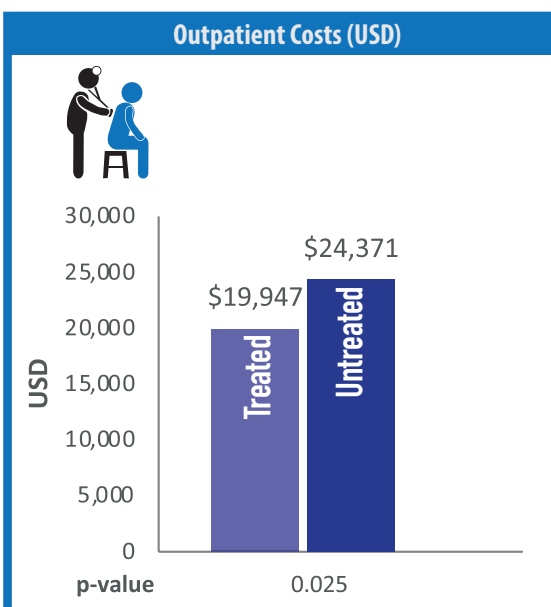
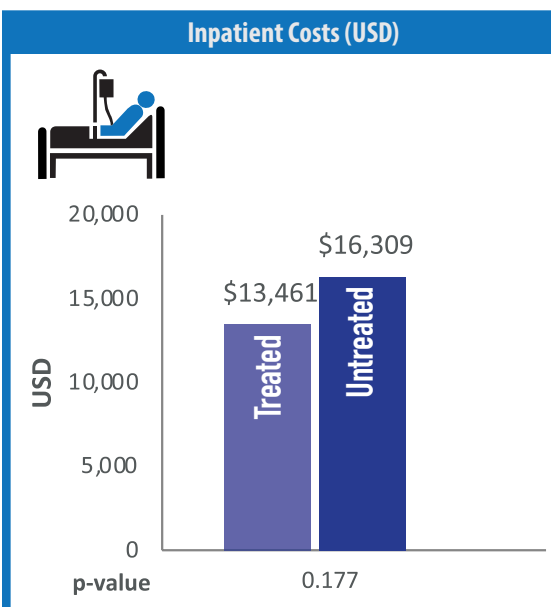
Acknowledgement: This study is sponsored by Genentech Inc., South San Francisco, CA, USA. Medical writing support was provided by the Global Outcomes Group and funded by Genentech Inc.

RESULTS: ALL DISPLAY FIGURES REPRESENT 180 DAY POST-TREATMENT. SEE QR CODE FOR 30, 60, 90, AND 180 DAY POST-TREATMENT.

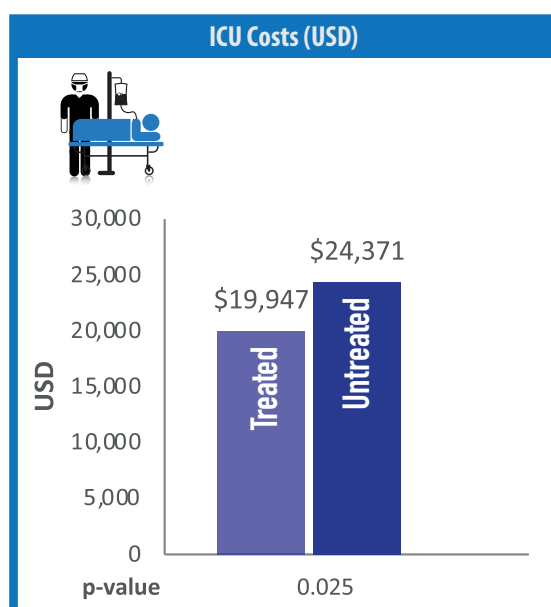
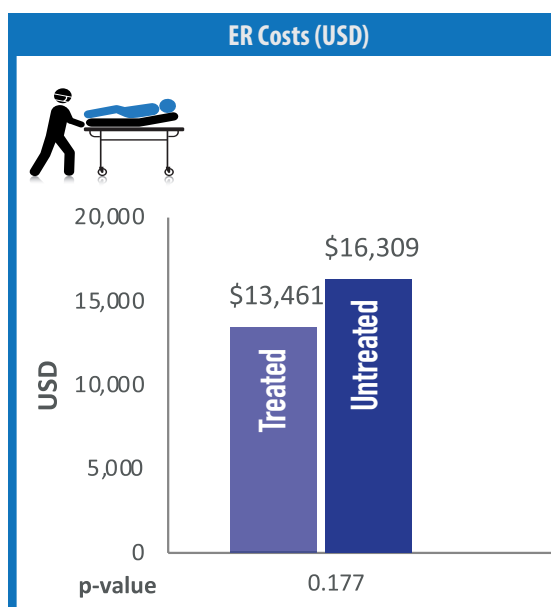
ALL-CAUSE HRU BY TIME POST-TREATMENT INDEX (VISITS) 180 DAYS



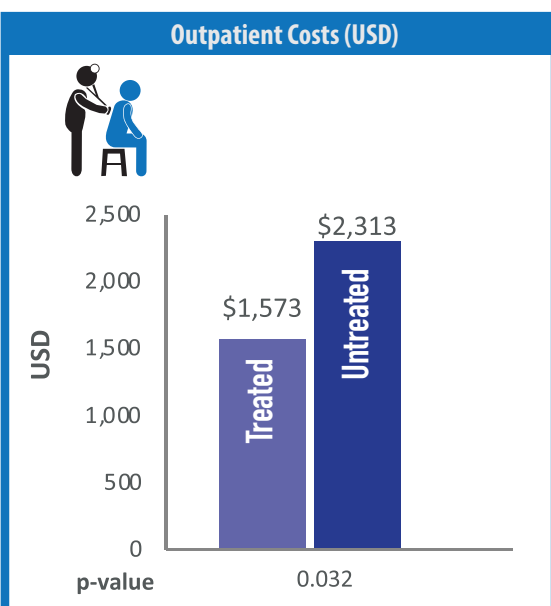
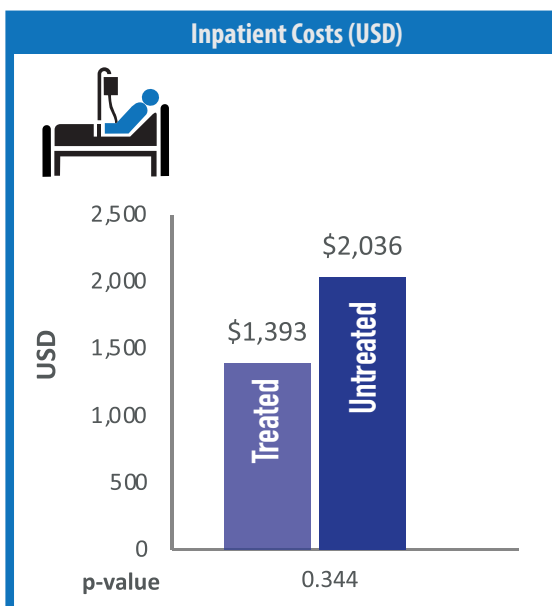
ALL-CAUSE COSTS BY TIME POST-TREATMENT INDEX 180 DAYS



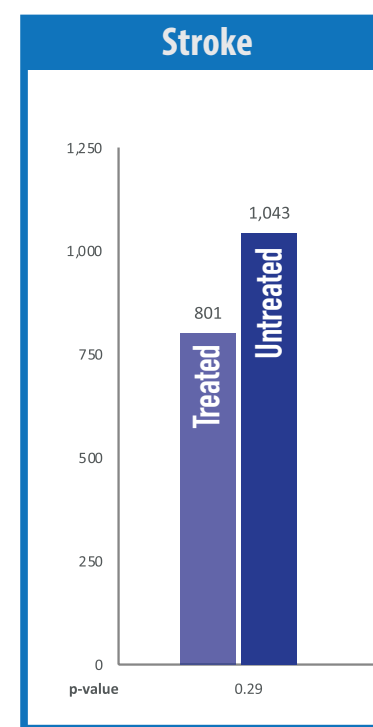
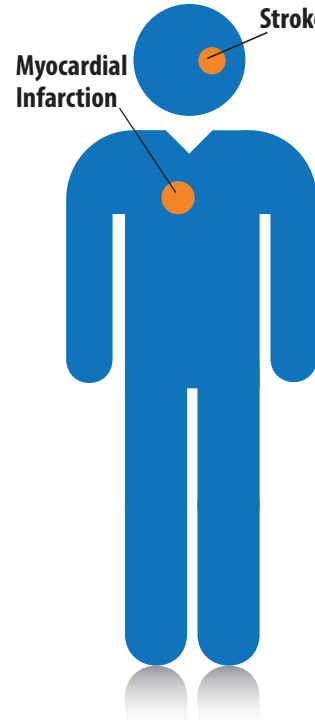
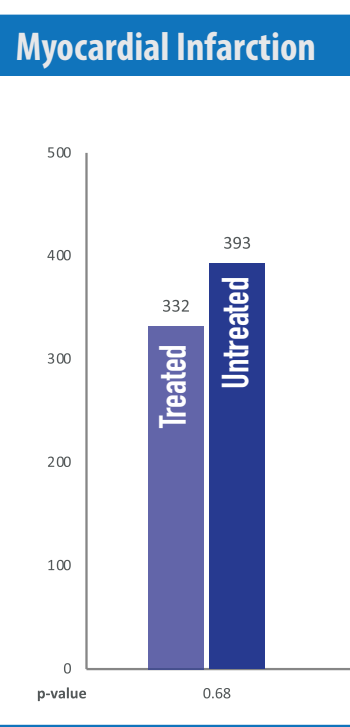
ALL-CAUSE COSTS BY TIME POST-TREATMENT INDEX 180 DAYS



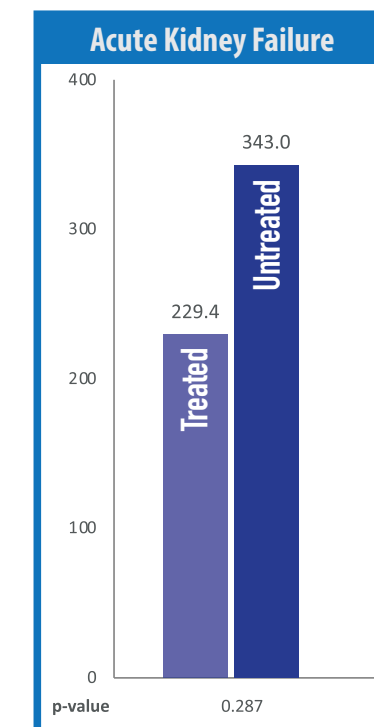
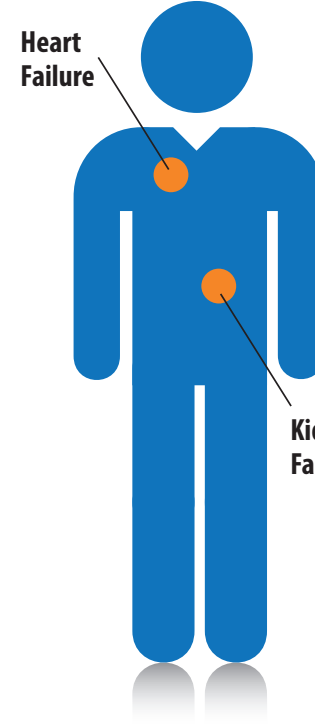
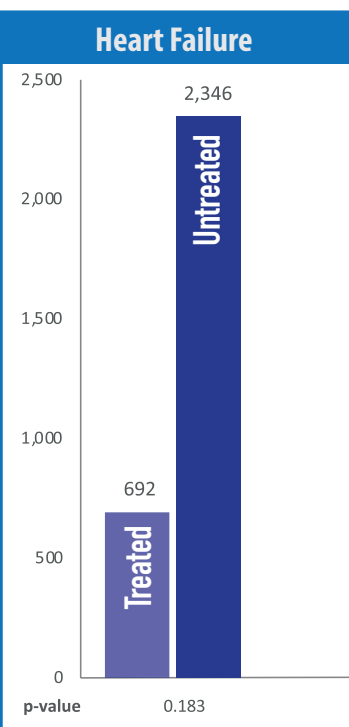
RESPIRATORY-RELATED HRU BY TIME POST-TREATMENT INDEX (COSTS) 180 DAYS



CVD-RELATED HRU COSTS BY TIME POST-TREATMENT INDEX (1/3) 180 DAYS



CVD-RELATED HRU COSTS BY TIME POST-TREATMENT INDEX 180 DAYS



LIMITATIONS

Data recorded in claims databases are primarily intended for billing purposes and may be subject to coding errors that impact upon the accuracy of the findings. The results may not be generalizable beyond the study population, as data used in this analysis were limited to individuals covered with a U.S. commercial insurance plan or Medicare and captured by the MarketScan databases.

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CONCLUSION

Patients who were not treated for influenza started with worse underlying conditions, whereas those who were treated had lower CCI scores. These conditions worsened over time. Cardiovascular patients who contract influenza and take antiviral medication suffer fewer influenza-related complications and overall HRU compared with CVD patients who were not prescribed antiviral treatments.

