HSD118

A Retrospective Analysis of Treatment Patterns and Costs in Cytomegalovirus Management Among Transplant Recipients in the USA

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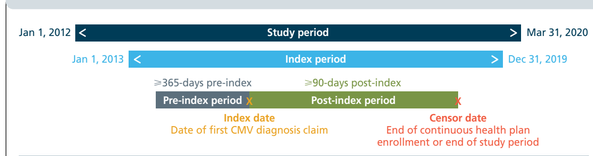
INTRODUCTION

- Cytomegalovirus (CMV) infection is a serious and common complication after solid organ transplant (SOT) and hematopoietic cell transplant (HCT).[1]
- Current guidelines for the management of CMV infection recommend prophylaxis or pre-emptive therapy (PET) after SOT.[2] PET based on monitoring of early viral replication is recommended after HCT,[3] with letermovir indicated as prophylaxis for HCT recipients at high risk of CMV infection.[4]
- The development of drug resistance and toxicities (eg, neutropenia and nephrotoxicity) have been associated with anti-CMV drugs and may lead to treatment failure, adding to the healthcare burden of these patients.[2,5]
- We report post-transplant CMV treatment patterns and costs of current anti-CMV drugs to provide insight into patient care and healthcare burden associated with CMV management for transplant recipients in the USA.

METHODS

- Patients with ⩾1 claim for a transplant procedure (HCT/SOT) before the index date and a subsequent claim for CMV diagnosis were retrospectively identified from the IBM MarketScan® database between January 2013–December 2019 (**Figure 1**).

Figure 1. Study design



Key inclusion criteria:
1. At least 1 HCT/SOT procedure claim prior to the index date
2. At least 1 CMV diagnosis claim (CMV International Classification of Disease-9/10 diagnosis code)
3. Continuous insurance enrollment ⩾365 days pre-index and ⩾90 days post-index date

Key exclusion criteria:
1. Claim for CMV diagnosis prior to the index date
2. At least 1 claim with a diagnosis of HIV

HIV, human immunodeficiency virus.

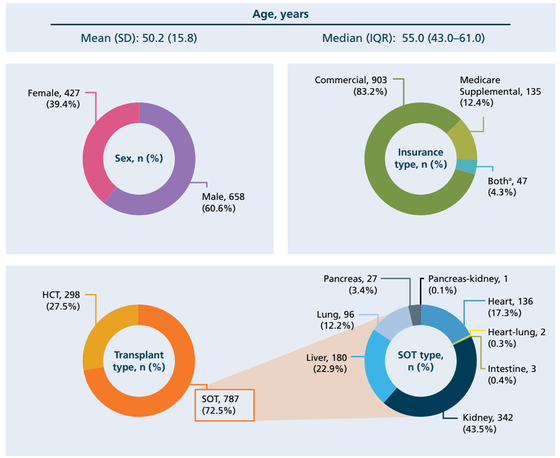
- Exploratory analyses included:
  - Pre-index anti-CMV drug use (⩾1 day on anti-CMV drugs between the transplant and index date), including the number of anti-CMV drugs used, the anti-CMV drugs used, and median duration of use.
  - Post-index anti-CMV drug use, including the number of treatment episodes, the anti-CMV drugs used and treatment patterns, and anti-CMV drug cost to payers.
    - Post-index anti-CMV treatment pattern analysis was performed in the full cohort with variable durations of follow-up time.
    - Anti-CMV drug costs were calculated using claims associated with specific National Drug Codes or the Healthcare Common Procedure Coding System. Per patient per month [PPPM] values are presented and were calculated using the total payer liability (payer liability less any patient costs or coordination of benefits) for the drug of interest for a patient over follow-up divided by the patient follow-up duration in months and standardized to 30 days.

RESULTS

Patient population and characteristics

- A total of 9,205 patients were identified based on CMV diagnosis claims, 1,085 of which fulfilled the complete eligibility criteria and were included in the final cohort.
- Baseline characteristics are displayed in **Figure 2**.

Figure 2. Baseline patient characteristics

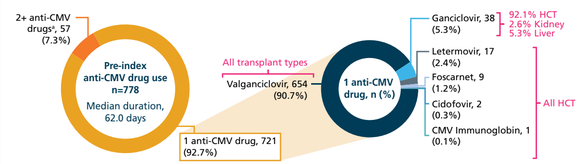


[a]Patients switched from commercial to Medicare Supplemental during the study period.
IQR, interquartile range; SD, standard deviation.

Pre-index anti-CMV drug use

- A total of 778 (71.7%) patients had pre-index anti-CMV drug use, of whom 721 (92.7%) received only one drug; this was most commonly valganciclovir (**Figure 3**).

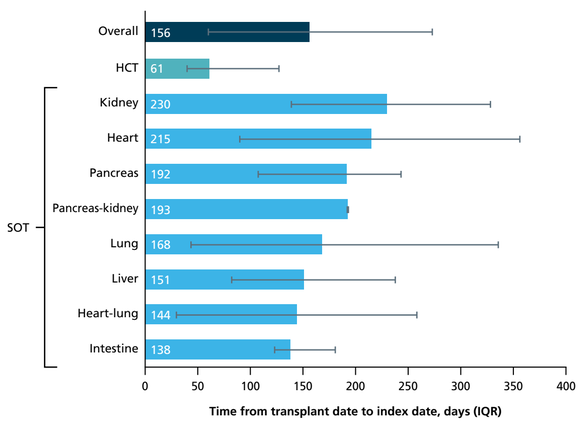
Figure 3. Pre-index anti-CMV drug use



[a]Patients who received 2+ anti-CMV drugs included drug switching or combination therapies.

- The median time to first CMV diagnosis claim was longer in patients with pre-index anti-CMV drug use (187 days) than in those without (51 days).
- The median time to first CMV diagnosis claim was shorter in HCT recipients than in SOT recipients, and varied by SOT transplant type (**Figure 4**).

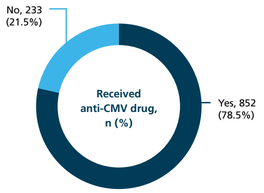
Figure 4. Time from transplant to index date by transplant type



Post-index anti-CMV drug use

- Overall, 852 (78.5%) patients had a claim for anti-CMV drug use at any time during the post-index period (**Figure 5**).

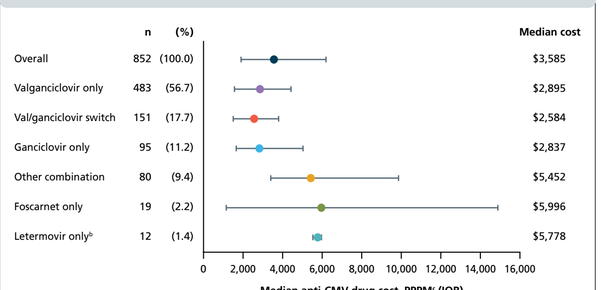
Figure 5. Post-index anti-CMV drug use and treatment episodes



Median time to initial treatment, days (IQR)	7 (1–22)
Number of treatment episodes, n (%)	
1	573 (67.3)
2	188 (22.1)
3	58 (6.8)
4	18 (2.1)
5	5 (0.6)
6	7 (0.8)
7	1 (0.1)
8	2 (0.2)
Total	**852 (100.0)**

- For patients with a claim for post-index anti-CMV drug use, the most common initial treatment pattern was valganciclovir only (**Figure 6**).
- The median cost of anti-CMV drug use was lowest in patients receiving treatment that switched between valganciclovir and ganciclovir, and highest in patients receiving foscarnet only (**Figure 6**).

Figure 6. Costs associated with anti-CMV drug use[a] for the first post-index CMV episode



[a]Cidofovir (n=5) and CMV immunoglobulin (n=7) data are not shown due to small sample sizes.
[b]Letermovir is indicated for CMV prophylaxis for high-risk HCT recipients;[4] this cost is associated with use of letermovir after the date of first CMV diagnosis claim.
[c]Calculated using total payer liability (payer liability minus patient costs or coordination of benefits) for the drug of interest for a patient over follow-up divided by the patient follow-up duration in months and standardized to 30 days.

CONCLUSIONS

- Most patients had pre-index anti-CMV drug use suggesting prophylaxis or pre-emptive therapy. Pre-index anti-CMV drug use delayed the development of CMV infection compared with no therapy.
- Valganciclovir was the most commonly used drug after CMV diagnosis, reflective of current US guidelines for the management of CMV for transplant recipients.[6,7]
- "Other combination" and less commonly used anti-CMV drugs, including letermovir and foscarnet, incurred the highest costs.
- Limitations of this retrospective analysis included the small sample size for some analyses, and the costs which reflect those of the payer and exclude rebates, patient cost sharing, or coordination of benefits.
- Further research to quantify the total costs for patients receiving each treatment pattern and their clinical profile, including outcomes, is needed.

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DISCLOSURES:
KM, XX, DKG, and KK are employees of Takeda Development Center Americas, Inc., and are Takeda stock owners. LH was an employee of Takeda Development Center Americas, Inc., at the time of the study and is now an employee of Olympus Corporation of the Americas.

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This poster is intended for healthcare providers.