# Individualization of Ganciclovir and Valganciclovir Doses Using Bayesian Prediction in Solid-organ Transplant Patients

Treatment of solid-organ transplant (SOT) patients with ganciclovir (GCV)-valganciclovir (VGCV) according to the manufacturer's recommendations may result in over- or underexposure. Bayesian prediction based on a population pharmacokinetics model may optimize GCV-VGCV dosing, achieving the area under the curve (AUC) therapeutic target.

We conducted a two-arm, randomized, open-label, 40% superiority trial in adult SOT patients receiving GCV-VGCV as prophylaxis or treatment of citomegalovirus infection. Group A was treated according to the manufacturer's recommendations. For group B, the dosing was adjusted based on target exposures using a Bayesian prediction model (NONMEM). Fifty-three patients were recruited (27 in group A and 26 in group B). About 88.6% of patients in group B and 22.2% in group A reached target AUC, achieving the 40% superiority margin (P<0.001; 95% confidence interval [CI] difference, 47 to 86%). The time to reach target AUC was significantly longer in group A than in group B (55.9□8.2 versus 15.8□2.3 days, P<0.001). A shorter time to viral clearance was observed in group B than in group A (12.5 versus 17.6 days; P□0.125). The incidences of relapse (group A, 66.67%, and group B, 9.01%) and late-onset infection (group A, 36.7%, and group B, 7.7%) were higher in group A. Neutropenia and anemia were related to GCV overexposure. GCV-VCGV dose adjustment based on a population pharmacokinetics Bayesian prediction model optimizes GCV-VGCV exposure.

This study has been registered at ClinicalTrials.gov under registration no. NCT01446445 and EudraCT under registration number no. 2010-021433-32.