

CYTOMEGALOVIRUS (CMV) INFECTION

Prophylaxis and management⁽¹⁾⁽²⁾

- We start valganciclovir in the immediate posttransplant period.
- Oral ganciclovir is less bioavailable than valganciclovir.
- Recent studies revealed that high-dose valganciclovir is effective for prevention of CMV disease and CMV DNAemia in both D+/R- and D±/R+ renal transplant recipients.

Antivirals doses and administration

Serostatus	Risk level	Recommended	Alternate
D-/R-	Low	Monitoring for clinical symptoms Consider antiviral prophylaxis against other herpes infections. Herpes Simplex Virus (HSV) prophylaxis with acyclovir 200mg orally twice daily for three months following transplantation	Preemptive therapy (if higher risk i.e. Significant transfusions)
D+/R-	High	6 months of GCV/VGCV OR preemptive therapy	
R+	Intermediate	3 months of VGCV OR preemptive therapy	

Intravenous ganciclovir (adapted from²⁶³)

CrCl, mL/min	Treatment dose	Maintenance/prevention dose
≥70	5.0 mg/kg q12 h	5.0 mg/kg q24 h
50-69	2.5 mg/kg q12 h	2.5 mg/kg q24 h
25-49	2.5 mg/kg q24 h	1.25 mg/kg q24 h
10-24	1.25 mg/kg q24 h	0.625 mg/kg q24 h
<10	1.25 mg/kg 3 times a week after hemodialysis	0.625 mg/kg 3 times a week after hemodialysis

Valganciclovir (adapted from^{263,264})

CrCl, mL/min	Treatment dose	Maintenance/prevention dose
≥60	900 mg every 12 h	900 mg once daily
40-59	450 mg every 12 h	450 mg once daily
25-39	450 mg once daily	450 mg every 2 d
10-24	450 mg every 2 d	450 mg twice weekly
<10	200 mg 3 times a week after hemodialysis ^a	100 mg 3 times a week after hemodialysis ^a

Valacyclovir (high dose)¹⁶⁷

CrCr, mL/min	Prevention dose (kidney only)
>75	2000 mg 4 times per day
51-75	1500 mg 4 times per day
26-50	1500 mg 3 times per day
10-25	1500 mg twice daily
<10 or dialysis	1500 mg once daily

^a Oral solution must be used in this instance (as VGCV tablets cannot be split).



Valganciclovir administration⁽³⁾

- Valganciclovir should be administered with meals.
- Tablets should not be crushed nor broken
- **Intermittent hemodialysis**
Valganciclovir is not recommended. In these patients, it is recommended that ganciclovir be given in appropriate doses.
- **Peritoneal dialysis**
Valganciclovir is not recommended.
- Leukopenia is a common adverse effect of valganciclovir that sometimes leads to temporary or permanent discontinuation of prophylactic therapy. When leukopenia occurs, it is reasonable to switch from a prophylactic strategy to a preemptive therapy strategy before the usual three-month period is over.

Ganciclovir administration⁽⁴⁾

- Administration by slow IV infusion over at least 1 hour.
- Too rapid infusion can cause increased toxicity due to excessive plasma levels.
- Flush line well with NS before and after administration.
- Levels of ganciclovir may be increased by mycophenolate.

Calculation of pediatric dosing for Valganciclovir (VGCV) for prevention of CMV disease in kidney or heart transplant patients (4 months to 16 years of age)

Step 1	Calculate BSA	Mosteller BSA (m ²) = $\sqrt{\frac{\text{Height (cm)} \times \text{Weight (kg)}}{3600}}$
Step 2	Calculate CrCl ^a	Schwartz CrCl (mL/min/1.73 m ²) = $k \times \text{Height (cm)} / \text{Serum Creatinine (mg/dL)}$
Step 3	Calculate the starting dose of VGCV oral solution ^b	$7 \times \text{BSA} \times \text{CrCl}$ If the calculated Schwartz CrCl exceed 150 mL/min per 1.73 m ² , then a maximum CrCl value of 150 mL/min per 1.73 m ² should be used in the equation

^a Where k = 0.413.

^b Maximum dose is 900 mg per dose.

- (1) Kotton CN, Kumar D, Caliendo AM, Huprikar S, Chou S, Danziger-Isakov L, et al. The Third International Consensus Guidelines on the Management of Cytomegalovirus in Solid-organ Transplantation. Transplantation [Internet]. 2018 Jun 1 [cited 2021 Nov 21];102(6):900–31. Available from: https://journals.lww.com/transplantjournal/Fulltext/2018/06000/The_Third_International_Consensus_Guidelines_on.13.aspx
- (2) CellCept (mycophenolate mofetil) dose, indications, adverse effects, interactions... from PDR.net [Internet]. [cited 2021 Nov 21]. Available from: <https://www.pdr.net/drug-summary/CellCept-mycophenolate-mofetil-988>
- (3) Valcyte (valganciclovir hydrochloride) dose, indications, adverse effects, interactions... from PDR.net [Internet]. [cited 2021 Nov 22]. Available from: <https://www.pdr.net/drug-summary/Valcyte-valganciclovir-hydrochloride-2146>
- (4) Cytovene (ganciclovir sodium) dose, indications, adverse effects, interactions... from PDR.net [Internet]. [cited 2021 Nov 22]. Available from: <https://www.pdr.net/drug-summary/Cytovene-ganciclovir-sodium-1025>

