

Antiviral Study Cheat Sheet

Drugs are categorized with viruses they are most commonly used for. They may have activity versus other viruses.

Influenza Drugs: Neuraminidase Inhibitors			
	<u>Oseltamivir</u>	<u>Zanamivir</u>	<u>Peramavir</u>
Brand name	Tamiflu	Relenza	Rapivab
Generic available	Yes	No	No
Route	Oral (capsule & solution)	Inhaled	IV
Adult treatment dose	75mg Q12h x5 days	10mg Q12h x 5 days	600mg x1
Adult prophylaxis dose	75mg Q24h x7-10 days	10mg Q24h x7 days	Not approved for treatment
Renal adjust	CrCl < 60	No	CrCl < 50
Other notes	Beware nausea, vomiting, headache, diarrhea	Not recommended w/ asthma or COPD	Has cross-resistance with oseltamivir but not zanamivir
Mechanism of action	Inhibit neuraminidase activity, which effects viral replication		
Initiation of therapy	These medications work best when started within 48 hours of symptom onset (treatment) or exposure (prophylaxis)		

Herpes Simplex Virus 1, Herpes Simplex Virus 2, and Herpes Zoster Virus Drugs			
	<u>Acyclovir</u>	<u>Valacyclovir</u>	<u>Famciclovir</u>
Brand name	Zovirax	Valtrex	Famvir
Generic available	Yes	Yes	Yes
Route	Oral, IV, topical	Oral	Oral
Typical frequency	3-5x/day	1-2x/day	2-3x/day
Renal adjust	CrCl < 50	CrCl < 50	CrCl < 60
Other notes	Beware renal crystaluria w/ high-dose IV; dose using IBW in obesity	Less frequent dosing means better adherence	Tablets not recommended for patients with galactose intolerance
Mechanisms of action	<p><u>Valacyclovir</u> is the prodrug of acyclovir. It is converted to <u>acyclovir</u> by intestinal and hepatic metabolism. Acyclovir converts to a monophosphate then a triphosphate form, which inhibits viral replication and DNA synthesis</p> <p><u>Famciclovir</u> is converted to the prodrug penciclovir. Penciclovir converts to a monophosphate form, then a triphosphate form, which interferes with viral DNA replication and synthesis.</p>		

- Be careful not to confuse valacyclovir (Valtrex) with valganciclovir (Valcyte).
- Initiate therapy as soon as possible in relation to onset of symptoms (e.g., tingling sensation).
- Many providers give bolus NS as a pre-med and post-med with IV acyclovir, to try to prevent crystaluria.

Cytomegalovirus Drugs					
	<u>Ganciclovir</u>	<u>Valganciclovir</u>	<u>Foscarnet</u>	<u>Cidofovir</u>	<u>Letermovir</u>
Brand name	Cytovene	Valcyte	Foscavir	Visitde	Prevymis
Route	Oral, IV, Ophth	Oral	IV	IV	Oral, IV
Renal adjust	CrCl < 70	CrCl < 60	Yes, is complicated	Avoid if CrCl ≤ 55	Caution w/ CrCl < 50
Nephrotoxicity	+	+	+++	+++	-
FDA Boxed Warnings	Hematologic toxicity, teratogenic/ carcinogenic	Hematologic toxicity, teratogenic/ carcinogenic	Nephrotoxicity, seizures	Nephrotoxicity, neutropenia, teratogenic/ carcinogenic	None
Mechanisms of action	Inhibits viral DNA synthesis	Converts to ganciclovir	Inhibits viral RNA & DNA polymerase	Interferes with the growing viral DNA chain	Targets CMV DNA terminase required for viral processing and packaging

- The UL97 and UL54 genes confer ganciclovir resistance. UL54 can also cause cidofovir and foscarnet resistance.
- Letermovir was FDA-approved in November 2017 for CMV prophylaxis, so clinical experience is limited, but it may have less side effects than the other CMV drugs and it does not have cross-resistance with the other CMV drugs.
- Ganciclovir oral is rarely used and the IV formulation requires preparation in a vertical flow-hood.
- Ganciclovir and valganciclovir doses are higher with induction therapy as compared to maintenance therapy.

Abbreviations: CMV = cytomegalovirus, CrCl = creatinine clearance, FDA = Food and Drug Administration, IV = intravenous