

Antiviral Study Cheat Sheet



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

| Influenza Drugs | | | | |
|-------------------------------|--|-----------------------------------|---|---|
| | <u>Oseltamivir</u> | <u>Zanamivir</u> | <u>Peramavir</u> | <u>Baloxavir marboxyl</u> |
| Brand name | Tamiflu | Relenza | Rapivab | Xofluza |
| Class | Neuraminidase inhibitor | | | Polymerase acidic endonuclease inhibitor |
| Generic available | Yes | No | No | No |
| Route | Oral | Inhaled | IV | Oral |
| Adult treatment dose | 75mg Q12h x5 days | 10mg Q12h x 5 days | 600mg x1 | 40-79kg: 40mg x1 80kg or more: 80mg x1 |
| Adult prophylaxis dose | 75mg Q24h x7-10 days | 10mg Q24h x7 days | Not approved for prophylaxis | Not approved for prophylaxis |
| Renal adjust | CrCl < 60 | No | CrCl < 50 | No |
| Other notes | Beware nausea, vomiting, headache, diarrhea | Not recommended w/ asthma or COPD | Has cross-resistance with oseltamivir but not zanamivir | No cross-resistance with neuraminidase inhibitors; FDA approved in 2018 |
| Initiation of therapy | These medications work best when started within 48 hours of symptom onset (treatment) or exposure (prophylaxis with oseltamivir or zanamivir) | | | |

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 |
| Usual frequency | 3-5 doses per day | 1-2 doses per day | 2-3 doses per day |
| Renal adjust | CrCl < 50 | CrCl < 50 | CrCl < 60 |
| Other notes | Beware crystaluria with high-dose IV; dose using IBW in obesity | Less frequent dosing means better adherence | Tablets not recommended for patients with galactose intolerance |
| Mechanism 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>Famciclovir 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).
- To try to prevent crystaluria many providers give maintenance NS + bolus NS pre-dose / post-dose with IV acyclovir.

Cytomegalovirus Drugs

| | <u>Ganciclovir</u> | <u>Valganciclovir</u> | <u>Foscarnet</u> | <u>Cidofovir</u> | <u>Letermovir</u> |
|-----------------------------|---|---|-------------------------------------|--|---|
| Brand name | Cytovene | Valcyte | Foscavir | Vistide | Prevymis |
| Route | Oral, IV, Opth | Oral | IV | IV | Oral, IV |
| Renal adjust | CrCl < 70 | CrCl < 60 | Yes, it's 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, NS = normal saline