Table 1

Pharmacologic Properties of Acyclovir for Injection[2,3]

Products	Acyclovir for Injection (Bedford Laboratories and American Pharmaceutical Partners (APP))
Classification	Antiviral Agent — Nucleoside analogue
Mechanism of Action	Synthetic purine nucleoside analogue. Has highly selective inhibitory activity due to its affinity for the enzyme thymidine kinase (TK). TK converts acyclovir to acyclovir monophosphate, which is eventually converted to acyclovir triphosphate. The triphosphate form stops replication of viral DNA in three ways: 1) competitive inhibition of viral DNA polymerase, 2) incorporation into and termination of the growing viral DNA chain, 3) inactivation of viral DNA polymerase
Spectrum of Activity	Herpes simplex virus types 1 and 2 (HSV-1 and HSV-2) and Varicella-Zoster virus. Acyclovir has greater activity against HSV (as compared to varicella-zoster virus) due to its more efficient phosphorylation by viral TK.
Indications (FDA labeled)	• Herpes Simplex infections in immunocompromised patients • Initial episodes of Herpes Genitalis • Herpes Simplex encephalitis • Neonatal Herpes Simplex Virus infection • Varicella Zoster infections in immunocompromised patients
Pharmacology	See table below
How Supplied	" Injection " Solution (preservative free) - 50 mg/mL (10, 20 mL) " Powder for reconstitution - 500, 1000 mg
Dosage	" Refer to tables below for adults, neonatal/pediatric patients
Dosage Adjustment	**Renal Adjustment** (see table below)

Half-life, normal renal function (adults)	Half-life, normal renal function (Neonate)	Half-life, normal renal function (3 month-12yr)	Volume of Distribution
2.5 hr	3.8 hr	2.4 hr	Neonate: 1.08 L/Kg three months-12 years: 1.01 L/Kg

	Adjusted Dosage Regimen	
Creatinine Clearance (mL/min/1.73 m2)	% of Normal Dose	Dosing Interval (h)
> 50	100%	8
25-50	100%	12
10-25	100%	24
0-10	50%	24
Hemodialysis: Adjust dosing schedule so that an additional dose is administered after each dialysis session Peritoneal dialysis: No supplemental dose needed		
Hepatic Adjustment: None		

Table 1

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Storage/Administration	• Storage • IV: store powder at room temperature (590-77 ºF or 150-25 ºC). Reconstituted solutions remain stable for 12 hours at room temperature (do not refrigerate). Once diluted for infusion, use within 24 hours • Administration • IV • Reconstitute 500 mg powder with 10 mL sterile water for injection (do not use bacteriostatic water containing benzyl alcohol or parabens). For IV infusion, dilute to final concentration of < 7 mg/mL • Compatible with D5W, NS, and LR • Administer over one hour to prevent renal damage and maintain adequate hydration
Monitoring	• Urinalysis, BUN, SCr, Liver Function Tests, CBC
Contraindications	• Hypersensitivity to acyclovir or valacyclovir
Warnings/Precautions	• Renal failure (sometimes resulting in death) has been observed in patients taking acyclovir • Thrombotic thrombocytopenic purpura/hemolytic uremic syndrome (TTP/HUS), which has resulted in death, has been observed in immunocompromised patients taking acyclovir • Use caution when administering with nephrotoxic agents: may increase the risk of renal dysfunction and/or reversible CNS symptoms • Maintain adequate hydration (to prevent crystalluria)
Adverse Effects	• Transient elevations in serum creatinine or BUN: 5%-10% • Inflammation or phlebitis at injection site: 9% • Nausea and vomiting: 7%
Drug/Food Interactions	• Probenecid with IV acyclovir causes increased half life and AUC
Pregnancy Category	B
Lactation	Acyclovir has been documented in breast milk following oral administration. Should only be given to nursing mothers with caution and only when indicated
Overdose/Toxicity	• Adverse events from toxicity include agitation, coma, seizures, and lethargy • Precipitation of acyclovir in renal tubules more likely to occur when a concentration of > 2.5 mg/mL exceeded in the intratubular fluid • Acute renal failure and anuria: patient may benefit from hemodialysis until renal function is restored