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UCSF Medical Center: Foscarnet Dosing and Monitoring

Foscarnet

Dosing & Monitoring Guidelines for Management of Invasive CMV Disease

Indications:

-Foscarnet is used for the treatment of invasive CMV disease among patients with suspected or documented ganciclovir-resistant CMV.

Dosing:

-Careful attention to dosing is required given the dose-related toxicities of foscarnet. Foscarnet doses are based on renal function according to the adjusted Cockroft-Gault equation:

$$\left\langle \frac{140 - age}{SCr \times 72} \right\rangle \times (0.85 \; if \; female)$$

-Note that **weight is not a factor in the adjusted Cockroft-Gault equation**. Examples of estimates of corresponding non-adjusted creatinine clearance for a typical 70kg male are in parentheses to provide a comparison.

-Foscarnet dosing is weight-based; whether total or ideal/adjusted body weight should be used in obese patients is not known.

Foscarnet Dosing Guidelines

Indication	Adjusted CrCl (ml/min/kg) [Non-adjusted CrCl for 70kg male (ml/min)]							
	>1.4 [>98]	1.0-1.4 [70-98]	0.8-1.0 [56-70]	0.6-0.8 [42-56]	0.5-0.6 [35-42]	0.4-0.5 [28-35]	<0.4 [<28]	Intermittent HD
Induction	90mg/kg q12h	70mg/kg q12h	50mg/kg q12h	80mg/kg q24h	60mg/kg q24h	50mg/kg q24h	NR*	60mg/kg pHD

Maintenance/ Secondary Prophylaxis	90-120 mg/kg q24h	70-90 mg/kg q24h	50-65 mg/kg q24h	80-105 mg/kg q48h	60-80 mg/kg q48h	50-65 mg/kg q48h	NR*	40-60 mg/kg pHD*

*Not FDA-approved dosing; NR=not recommended by manufacturer – consult ID pharmacy for recommendations

Important considerations for foscarnet administration:

-***Infusion rate***: infusion of foscarnet over <2h has been associated with symptomatic hypocalcemia (e.g. circumoral paresthesias). Initial **doses should be infused over 2 hours**. Reduction of infusion duration to no less than 1 hour may be attempted with careful monitoring.

-***Infusion site***: Infusion through a **central line is recommended** when available. If infusing through a **peripheral line, the solution must be diluted to £12 mg/ml**.

-***Hydration***: Ensuring **adequate hydration is essential** to mitigating the nephrotoxicity of foscarnet.**Before the initial dose, administer 750-1000ml of D5 or NS over 1 hour.** With **subsequent doses, administer 500-1000ml of D5 or NS concurrently with the foscarnet**. In patients with fluid overload, less (but not none) hydration may be given, recognizing the associated increased risk of nephrotoxicity.

Monitoring parameters:

-***Renal function***: Dose-related nephrotoxicity occurs in a substantial proportion of foscarnet recipients. Renal dysfunction usually (though not always) resolves 1-5 weeks after discontinuing foscarnet. **During initial therapy** and during hospitalization, **serum creatinine should be monitored daily**. Sustained (e.g. on 2 separate occasions) changes in serum creatinine of 0.4 mg/dl or more should warrant consideration for dose adjustment. For patients receiving foscarnet in an **outpatient setting, serum creatinine should be monitored at least twice weekly**. If creatinine increases substantially (e.g. >0.4mg/dl), consideration should be given to re-checking serum creatinine before infusion of next dose to determine if dose adjustment is necessary.

-***Electrolytes***: Depletion of Ca, K, Mg, Phos is common during foscarnet infusions. These **electrolytes should be monitored 2-3 times weekly during the induction phase of foscarnet therapy (1-2 times weekly during maintenance therapy)** and repleted as necessary. If electrolyte depletion is problematic, pretreatment with oral Ca, K, Mg or addition of electrolytes to hydration fluid (administered through a separate line from the foscarnet infusion), should be considered. Special **caution should be used in patients with cardiac or seizure disorders**.

-***Hematologic***: Anemia has been frequently described in association with foscarnet therapy in AIDS patients. A **complete blood count should be obtained at least once weekly during therapy**.

-***Symptomatic***: Nausea and vomiting may occur with foscarnet therapy. Pre-medication with anti-emetics may reduce the risk. Genital ulcerations occurring from excretion of foscarnet have been described; increased personal hygienic measures may be necessary. Symptoms of electrolyte abnormalities (tingling, paresthesias, arrhythmias, etc) should be monitored on follow-up visits.

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