

Use of Sildenafil for Pulmonary Hypertension in Infants and Young Children

Sildenafil has been used to reduce pulmonary hypertension in infants with a dependence on nitrous oxide. It is a selective inhibitor of phosphodiesterase 5 (PDE5). Its mechanism of action is to reduce the degradation of cyclic guanosine monophosphate resulting in relaxation of the vascular smooth muscle and improved blood flow. Through this mechanism it enhances the action of nitric oxide on the pulmonary vasculature.

Currently the pharmacy can prepare a 2.5 mg/ml suspension from tablets for administration to infants and young children. There is a 20 mg tablet (Revatio®) for older children able to take tablets.

This is a non-formulary item and requires a non-formulary request to accompany initial order.

Dosage and Administration

Initial dose should be 0.25-0.5 mg/kg/dose with a frequency of Q4-8hours. It would be suggested that doses be .25 mg increments to provide for easily measured doses (0.1 ml increments)

Doses are titrated on response.

Maximum dose is 2 mg/kg/dose every 4 hours. Doses beyond this have not shown any additional benefit as of now.

Adverse Effects

Headache and flushing are the most commonly reported AEs. Some small reductions in blood pressure have been reported in clinical trials. Rare reactions in adults include arrhythmias, cerebral thrombosis, hypertonia, parathesias, tremor, photosensitivity, colitis, vomiting, abnormal LFTs, anemia, leucopenia and dyspnea.

Drug Interactions

Medications which inhibit CYP3A4 will enhance activity of sildenafil (erythromycin, clarithromycin, ketoconazole and protease inhibitors). Cimetidine can increase sildenafil activity.

Medications which induce the CYP3A4 enzymes will or may decrease activity of sildenafil. Rifampin, carbamazepine, fosphenytoin, phenytoin, phenobarbital, and pentobarbital are in this group.

Additionally concomitant administration of other antihypertensives including nitrates, alpha blockers, and calcium channel blockers may cause excessive hypotension.

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