

## VERAPAMIL

**Class:** Calcium Channel Blocker, Nondihydropyridine

**Indications:** Oral: Treatment of hypertension; angina pectoris (vasospastic, chronic stable, unstable); supraventricular tachyarrhythmia (PSVT, atrial fibrillation/flutter [rate control])

I.V.: Supraventricular tachyarrhythmia (PSVT, atrial fibrillation/flutter [rate control])

**Available dosage form in the hospital:** 40MG TAB, 80MG TAB, 240MG TAB, 2.5 MG/ ML 2ML AMP.

### Dosage:

**-Angina:** Oral: **Note:** When switching from immediate-release to extended/sustained release formulations, the total daily dose remains the same unless formulation strength does not allow for equal conversion.

*-Immediate release:* Initial: 80-120 mg 3 times/day (elderly or small stature: 40 mg 3 times/day); Usual dose range: 80-160 mg 3 times/day

*-Extended release :* Initial: 180 mg once daily at bedtime; if inadequate response, may increase dose at weekly intervals to 240 mg once daily, then 360 mg once daily, then 480 mg once daily; maximum dose: 480 mg/day

**-Chronic atrial fibrillation (rate-control), PSVT prophylaxis:** Oral: Immediate release: 240-480 mg/day in 3-4 divided doses; Usual dose range: 120-360 mg/day in divided doses

**-Hypertension:** Oral: **Note:** When switching from immediate-release to extended/sustained release formulations, the total daily dose remains the same unless formulation strength does not allow for equal conversion.

*-Immediate release:* 80 mg 3 times/day; usual dose range: 80-320 mg/day in 2 divided doses

*-Sustained release:* Usual dose range: 120-480 mg/day in 1-2 divided doses; **Note:** There is no evidence of additional benefit with doses >360 mg/day.

*-Calan® SR, Isoptin® SR:* Initial: 180 mg once daily in the morning (elderly or small stature: 120 mg/day); if inadequate response, may increase dose at weekly intervals to 240 mg once daily, then 180 mg twice daily (or 240 mg in the morning followed by 120 mg in the evening); maximum dose: 240 mg twice daily.

*-Verelan®:* Initial: 180 mg once daily in the morning (elderly or small stature: 120 mg/day); if inadequate response, may increase dose at weekly intervals to 240 mg once daily, then 360 mg once daily, then 480 mg once daily; maximum dose: 480 mg/day

*-Extended release:* Usual dose range: 120-360 mg once daily (once-daily dosing is recommended at bedtime).

*-Covera-HS®:* Initial: 180 mg once daily at bedtime; if inadequate response, may increase dose at weekly intervals to 240 mg once daily, then 360 mg once daily, then 480 mg once daily; maximum dose: 480 mg/day

*-Verelan® PM:* Initial: 200 mg once daily at bedtime (elderly or small stature: 100 mg/day); if inadequate response, may increase dose at weekly intervals to 300 mg once daily, then 400 mg once daily; maximum dose: 400 mg/day

**-SVT:** I.V.: 2.5-5 mg over 2 minutes; second dose of 5-10 mg (~0.15 mg/kg) may be given 15-30 minutes after the initial dose if patient tolerates, but does not respond to initial dose; maximum total dose: 20-30 mg.

### **Geriatric**

Refer to adult dosing.

**Hypertension:** Oral: **Note:** When switching from immediate release to extended or sustained release formulations, the total daily dose remains the same unless formulation strength does not allow for equal conversion.

-Manufacturer's recommendations:

-Immediate release: Initial: 40 mg 3 times daily

-Sustained release: Calan® SR, Isoptin® SR, Verelan®: Initial: 120 mg once daily in the morning

-Extended release:

-Covera-HS®: Initial: 180 mg once daily at bedtime

-Verelan® PM: Initial: 100 mg once daily at bedtime

-ACCF/AHA Expert Consensus recommendations: Consider lower initial doses and titrating to response (Aronow, 2011)

### **Renal Impairment:**

Manufacturer recommends caution and additional ECG monitoring in patients with renal insufficiency.

The manufacturer of Verelan PM® recommends an initial dose of 100 mg/day at bedtime. **Note:** A multiple dose study in adults suggests reduced renal clearance of verapamil and its metabolite (norverapamil) with advanced renal failure. Additionally, several clinical papers report adverse effects of verapamil in patients with chronic renal failure receiving recommended doses of verapamil. In contrast, a number of single dose studies show no difference in verapamil (or norverapamil metabolite) disposition between chronic renal failure and control patients.

Dialysis: Not removed by hemodialysis, supplemental dose is not necessary.

### **Hepatic Impairment :**

In cirrhosis, reduce dose to 20% and 50% of normal for oral and intravenous administration, respectively, and monitor ECG. The manufacturer of Verelan PM® recommends an initial adult dose of 100 mg/day at bedtime. The manufacturers of Calan®, Calan® SR, Covera-HS®, Isoptin® SR, and Verelan® recommend giving 30% of the normal dose to patients with severe hepatic impairment.

**Common side effect:** >10%: Central nervous system: Headache (1% to 12%). Gastrointestinal: Gingival hyperplasia (≤19%), constipation (7% to 12%)

1% to 10%: Cardiovascular: Peripheral edema (1% to 4%), hypotension (3%), CHF/pulmonary edema (2%), AV block (1% to 2%), bradycardia (HR <50 bpm: 1%), flushing (1%). Central nervous system: Fatigue (2% to 5%), dizziness (1% to 5%), lethargy (3%), pain (2%), sleep disturbance (1%). Dermatologic: Rash (1% to 2%)

**Pregnancy Risk Factor:** C