23. **DILTIAZEM**

**Class:** Antianginal Agent; Antiarrhythmic Agent, Class IV; Channel Blocker, Nondihydropyridine.

**Indications:**
Oral: Primary hypertension; chronic stable angina or angina from coronary artery spasm
Injection: Control of rapid ventricular rate in patients with atrial fibrillation or atrial flutter; conversion of paroxysmal supraventricular tachycardia (PSVT)

**Unlabeled:** ACLS guidelines: Injection: Stable narrow-complex tachycardia uncontrolled or unconverted by adenosine or vagal maneuvers or if SVT is recurrent
Hypertrophic cardiomyopathy; pediatric hypertension

**Dosage**

**Angina:** Oral:
- Capsule, extended release:
  - Dilacor XR®, Dilt-XR, Diltia XT®: Initial: 120 mg once daily; titrate over 7-14 days; usual dose range: 120-320 mg/day; maximum: 480 mg/day
  - Cardizem® CD, Cartia XT®, Dilt-CD: Initial: 120-180 mg once daily; titrate over 7-14 days; usual dose range: 120-320 mg/day; maximum: 480 mg/day
  - Tiazac®, Taztia XT®: Initial: 120-180 mg once daily; titrate over 7-14 days; usual dose range: 120-320 mg/day; maximum: 540 mg/day
- Tablet, extended release (Cardizem® LA, Matzim® LA, Tiazac® XC [CAN; not available in U.S.]): 180 mg once daily; may increase at 7- to 14-day intervals; usual dose range: 120-320 mg/day; maximum: 360 mg/day
- Tablet, immediate release (Cardizem®): Usual starting dose: 30 mg 4 times/day; titrate dose gradually at 1- to 2-day intervals; usual dose range: 120-320 mg/day

**Hypertension:** Oral:
- Capsule, extended release (once-daily dosing): 180-240 mg once daily; dose adjustment may be made after 14 days; usual dose range: 180-420 mg/day; maximum: 480 mg/day
  - Cardizem® CD, Cartia XT®, Dilt-CD: Initial: 180-240 mg once daily; dose adjustment may be made after 14 days; usual dose range (JNC 7): 180-420 mg/day; maximum: 480 mg/day
  - Dilacor® XR, Diltia XT®, Dilt-XR: Initial: 180-240 mg once daily; dose adjustment may be made after 14 days; usual dose range (JNC 7): 180-420 mg/day; maximum: 540 mg/day
  - Tiazac®, Taztia XT®: Initial: 120-240 mg once daily; dose adjustment may be made after 14 days; usual dose range (JNC 7): 180-420 mg/day; maximum: 540 mg/day
- Capsule, extended release (twice-daily dosing): Initial: 60-120 mg twice daily; dose adjustment may be made after 14 days; usual range: 240-360 mg/day.
Note: Diltiazem is available as a generic intended for either once- or twice-daily dosing, depending on the formulation; verify appropriate extended release capsule formulation is administered.

-Tablet, extended release (Cardizem® LA, Matzim® LA, Tiazac® XC [CAN; not available in U.S.]): Initial: 180-240 mg once daily; dose adjustment may be made after 14 days; usual dose range: 120-540 mg/day

**Atrial fibrillation, atrial flutter, PSVT: I.V.:**

-Initial bolus dose: 0.25 mg/kg actual body weight over 2 minutes (average adult dose: 20 mg); ACLS guideline recommends 15-20 mg

-Repeat bolus dose (may be administered after 15 minutes if the response is inadequate): 0.35 mg/kg actual body weight over 2 minutes (average adult dose: 25 mg); ACLS guideline recommends 20-25 mg

-Continuous infusion (infusions >24 hours or infusion rates >15 mg/hour are not recommended):
  
  Initial infusion rate of 10 mg/hour; rate may be increased in 5 mg/hour increments up to 15 mg/hour as needed; some patients may respond to an initial rate of 5 mg/hour.

  If diltiazem injection is administered by continuous infusion for >24 hours, the possibility of decreased diltiazem clearance, prolonged elimination half-life, and increased diltiazem and/or diltiazem metabolite plasma concentrations should be considered.

**Conversion from I.V. diltiazem to oral diltiazem:**

*Oral dose (mg/day) is approximately equal to [rate (mg/hour) x 3 + 3] x 10.*

- 3 mg/hour = 120 mg/day
- 5 mg/hour = 180 mg/day
- 7 mg/hour = 240 mg/day
- 11 mg/hour = 360 mg/day.

**Geriatric**

Refer to adult dosing. In the management of hypertension, consider lower initial doses (eg, 120 mg once daily using extended release capsule) and titrate to response (Aronow, 2011).

**Renal Impairment:**

Use with caution; no dosing adjustments recommended.

Dialysis: Not removed by hemo- or peritoneal dialysis; supplemental dose is not necessary.

**Hepatic Impairment:**

Use with caution; no specific dosing recommendations available; extensively metabolized by the liver; half-life is increased in patients with cirrhosis

Available dosage form in the hospital: DILTIAZEM 25MG/ML, 5ML VIAL, 60MG TAB, 90MG TAB, DILTIAZEM HCL 120MG TAB
Common side effect: >10%: Cardiovascular: Edema (2% to 15%), Central nervous system: Headache (5% to 12%)

2% to 10%: Cardiovascular: AV block (first degree 2% to 8%), edema (lower limb, 2% to 8%), pain (6%), bradycardia (2% to 6%), hypotension (<2% to 4%), vasodilation (2% to 3%), extrasystoles (2%), flushing (1% to 2%), palpitation (1% to 2%)

Central nervous system: Dizziness (3% to 10%), nervousness (2%)

Pregnancy Risk Factor: C