Nifedipine (nyfedipine)

Indications
Management of: Hypertension (extended-release only); Angina pectoris; Vasospastic (Prinzmetal's) angina. Established: Ectopic: Prevention of migraine headaches. Management of: Hypertension (extended-release only); Angina pectoris; Vasospastic (Prinzmetal's) angina.

Actions
Blocks calcium transmembrane entry and vascular smooth muscle cells, resulting in inhibition of excitation-contraction coupling and subsequent contraction. Inhibits calcium transport into myocardial and vascular smooth muscle cells, resulting in systemic vasodilation, resulting in decreased BP. Coronary vasodilation, resulting in decreased frequency and severity of attacks of angina.

Pharmacokinetics
Absorption: Well absorbed after oral administration, but large amounts are rapidly metabolized (primarily by CYP3A4 enzyme system), resulting in a bioavailability of 45–70%; bioavailability of 70% with long-acting (CC, PA, XL) forms.

Distribution: Unchanged.

Protein Binding: 90–98%.

Metabolism and Excretion: Mostly metabolized by the liver. Absorption: Well absorbed after oral administration, but large amounts are rapidly metabolized (primarily by CYP3A4 enzyme system), resulting in a bioavailability of 45–70%; bioavailability of 70% with long-acting (CC, PA, XL) forms.

Half-life: 2–5 hr.

TIME/ACTION PROFILE
PO 10mg	20 min	peak	6–8 hr
PO 20mg	1 hr	peak	12 hr
PO 40mg, 60mg	1 hr	peak	24 hr

Contraindications/Precautions
Contraindicated in: Hypersensitivity; Sick sinus syndrome. 2nd- or 3rd-degree AV Block (unless an artificial pacemaker is in place). Symptomatic HF. 90 mm Hg. Glaucoma.

Use Cautiously in:
• OB: Safety not established. Geri: Short-acting forms appear on ih the list due to risk of hypotension and constipation. Use with caution; also associated with risk of falls. Adverse Reactions: Side Effects

Canadian drug name.

Adverse Reactions: Side Effects
CNS:
-Drowsiness, dizziness, confusion, dizziness, drowsiness, jitteriness, somnolence, psychosis, headache, weakness, EENT: blurred vision, diaphoresis, taste changes.
Respiratory:
-Respiratory depression, cough, dyspnea, shortness of breath.
CV:
-Atrial fibrillation, AV block, peripheral edema, chest pain, hypotension, palpitations, tachycardia.
Musculoskeletal:
-Back pain, arthralgia, muscle cramps.
GI:
-Dyspepsia, dysuria, nocturia, polyuria, sexual dysfunction, nausea, vomiting.
GU:
-Dysuria, nocturia, hematuria, pyuria.
Endo:
-Insomnia, hypogonadism, gynecomastia, hyperglycemia.
Derm:
-Rash, pruritus, urticaria, alopecia.
EENT:
-Blurred vision, diplopia, tinnitus.
Resp:
-Dyspnea, cough, dyspnea, bronchospasm.
GI:
-Dyspepsia, diarrhea, nausea, vomiting.
GU:
-Dysuria, hematuria.
Endo:
-Hyperglycemia.

Drug-Drug Interactions

CYP3A4 Inhibitors:
• Strong CYP3A4 inhibitors: Rifampin, rifabutin, phenobarbital, phenytoin, carbamazepine, or St. John's wort. May significantly increase levels and effects; concurrent use is contraindicated. Ketoconazole, itraconazole, fluconazole, cyclosporine, nefazodone, saquinavir, indinavir, nelfinavir, ritonavir, or prazosin may increase levels and effects; concurrent use is contraindicated. Concomitant use with beta blockers, digoxin, or disopyramide may result in hypotension, conduction defects, or HF. Consider and discontinue use.

CYP3A4 Inducers:
• Strong CYP3A4 inducers: Cimetidine, or amiodarone. May increase levels and risk of toxicity from digoxin. Concomitant use with beta blockers, digoxin, or disopyramide may result in bradycardia, conduction defects, or HF. Consider and discontinue use.

Other:
• Concurrent use with nonopioid analgesics, anticholinergic agents, or sedating H1 antagonists may increase sedation. May increase levels and risk of toxicity from antihypertensives, other antihypertensives, other antihypertensives, acute ingestion of alcoholic beverages, nonsteroidal antiinflammatory drugs, levodopa, or pulsatile blockers. Strong CYP3A4 inducers, such as rifampin, or St. John's wort. May increase levels and effects; concurrent use is contraindicated.

Other:
• Concurrent use with nonopioid analgesics, anticholinergic agents, or sedating H1 antagonists may increase sedation. May increase levels and risk of toxicity from antihypertensives, other antihypertensives, other antihypertensives, acute ingestion of alcoholic beverages, nonsteroidal antiinflammatory drugs, levodopa, or pulsatile blockers. Strong CYP3A4 inducers, such as rifampin, or St. John's wort. May increase levels and effects; concurrent use is contraindicated.
including carbamazepine, phenobarbital, phenytoin, and rifampin may lower levels and effect; avoid concurrent use.

Drug-Natural Products: St. John’s wort may significantly lower levels and effects; avoid concurrent use.

Drug-Food: Grapefruit and grapefruit juice q-serum levels and effect; avoid concurrent use.

Route/Dosage
PO (Adults): 10–30 mg 3 times daily (not to exceed 180 mg/day), or 10–20 mg twice daily as immediate-release form, or 10–90 mg once daily as sustained-release form (not to exceed 90–120 mg/day).

NURSING IMPLICATIONS
Assessment
- Monitor BP and pulse before therapy, during dose titration, and periodically during therapy.
- Monitor intake and output ratios and daily weight. Assess for signs of HF (peripheral edema, rales/crackles, dyspnea, weight gain, jugular venous distention).
- Patients receiving digoxin concurrently with nifedipine should have routine tests of serum digoxin levels and be monitored for signs and symptoms of digoxin toxicity.
- Assess for rash periodically during therapy. May cause Stevens-Johnson syndrome. Discontinue therapy if severe or if accompanied with fever, general malaise, fatigue, muscle or joint aches, thirst, oral lesions, conjunctivitis, hepatitis and/or eosinophilia.
- Assess for angina periodically during therapy.
- Lab Test Considerations: Total serum calcium concentrations are not affected by calcium channel blockers.
- Monitor serum potassium periodically. Hypokalemia increases risk of arrhythmias; should be corrected.
- Monitor renal and hepatic functions periodically during long-term therapy. Several days of therapy may cause ↑ hepatic enzymes, which return to normal upon discontinuation of therapy.
- Nifedipine may cause positive ANA and direct Coombs’ test results.

Potential Nursing Diagnoses
Decreased cardiac output (Indications)
Acute pain (Indications)

Implementation
- Do not confuse with nicardipine or nimodipine.
- PO: May be administered without regard to meals. May be administered with meals if GI irritation becomes a problem.
- Do not open, break, crush, or chew extended-release tablets. Empty tablets that appear in stool are not significant.
- Avoid administration with grapefruit juice.
- Sublingual use is not recommended due to serious adverse drug reactions.

Patient/Family Teaching
- Advise patient to take medication as directed, even if feeling well. Take missed doses as soon as possible unless almost time for next dose; do not double doses. May need to be discontinued gradually.
- Instruct patient on technique for monitoring pulse. Instruct patient to contact health care professional if heart rate is ≤50 bpm.
- Advise patients to avoid grapefruit or grapefruit juice during therapy.
- Caution patients to change positions slowly to minimize orthostatic hypotension.
- May cause drowsiness or dizziness. Advise patient to avoid driving or other activities requiring alertness until response to the medication is known.
- Instruct patients and family about risk for falls and how to reduce risk in the home.
- Instruct patient on importance of maintaining good dental hygiene and using denture cleanser daily to prevent oral lesions, bleeding, and gingival hyperplasia (gum enlargement).
- Advise patient to notify health care professional if rash, irregular heart beat, dyspnea, swelling of hands and feet, pronounced dizziness, nausea, constipation, or hypertension occurs or if headache is severe or persists.

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NIFEdipine

● Caution patient to wear protective clothing and use sunscreen to prevent photosensitivity reactions.

● Angina: Instruct patient on concurrent nitrate or beta-blocker therapy to continue taking both medications as directed and use SL nitroglycerin as needed for anginal attacks.

● Inform patient that anginal attacks may occur 30 min after administration because of reflex tachycardia. This is usually temporary and is not an indication for discontinuation.

● Advise patient to contact health care professional if chest pain does not improve, worsens after therapy, or occurs with diaphoresis; if shortness of breath occurs; or if periorbital edema occurs.

● Caution patient to discuss exercise restrictions with health care professional before exercise.

● Hypertension: Encourage patient to comply with other interventions for hypertension (weight reduction, low-sodium diet, smoking cessation, moderation of alcohol consumption, regular exercise, and stress management). Medication controls but does not cure hypertension.

● Instruct patient and family in proper technique for monitoring BP. Advise patient to take BP weekly and to report significant changes to health care professional.

Evaluation/Desired Outcomes

● Decrease in BP.

● Decrease in frequency and severity of anginal attacks.

● Decrease in need for nitrate therapy.

● Increase in activity tolerance and sense of well-being.

Why was this drug prescribed for your patient?

* Geberic Implication.  ** GEF* Indicates life-threatening; underline indicates most frequent.  *** Discontinued.