



PROTOCOL: Tocolysis with Nifedipine

Background:

Nifedipine (Adalat) is a calcium-channel blocker that acts by relaxing smooth muscle. Its main use until now has been in the management of hypertension and angina. When used in preterm labor, it relaxes the uterine wall muscle, decreasing contractions and prolonging the time to delivery. When used properly, it has a low rate of maternal side-effects and has not been shown to have significant deleterious effects on the fetus.

Goal:

To delay time to delivery, in order to administer corticosteroids and enable transfer to a higher-level care center.

Indications:

- Pre-term labor (regular contractions resulting in cervical changes) gestational age of 24 to 34 weeks, with intact membranes
- To delay delivery for 48 hours to allow action of corticosteroids

Absolute contra-indications

- Intra-uterine infection
- Intrauterine fetal death
- Lethal fetal malformation
- Eclampsia or severe pre-eclampsia
- **Concurrent use of magnesium sulfate** (due to risk of cardiovascular collapse)
- Concurrent use of anti-arrhythmic medications
- Fetal or maternal arrhythmia (eg. Wolf-Parkinson-White)
- Maternal heart failure
- Symptomatic maternal hypotension
- Allergy to calcium-channel blockers
- Current antepartum hemorrhage
- Urgent fetal or maternal indication to deliver

Relative contra-indications

- Gestational age of 24-32 weeks with rupture of membranes and no evidence of underlying infection (discuss with high-risk obstetrician)
- Gestational age >34 weeks (discuss with high-risk obstetrician)
- Cervical dilatation more than 4 cms (discuss with high-risk obstetrician)
- Non-reassuring fetal heart pattern
- Fetal tachycardia
- Intra-uterine growth retardation
- Multiple gestation

DOSING

Nifedipine (Adalat)

Loading dose: 20 mg PO in one dose. **Do not administer sublingually. Do not allow crushing or chewing.**

If contractions continue after 20 minutes, give 10 mg PO q 20 mins for a maximum of 2 doses.

Maximum initial dose: 40 mg in the first 40-60 minutes.

Maintenance dose

Contractions should cease after the initial dose of 20-40 mg PO.

The maintenance dose is 20 mg PO q 8 hours for 24 hours, or longer, depending on prescription.

If contractions continue 60 minutes after the initial dose, nifedipine therapy should be considered a failure. A different tocolytic agent may be considered.

Note: Indomethacin may be used as a second-line agent in cases where nifedipine is not effective, or as a first-line agent if certain contraindications to nifedipine exist.

Indomethacin dose:

Up to 31⁶ weeks gestation:

100 mg pr suppository, then 50 mg pr q 8 hours for 48 hours

Nursing care instructions

- Full vital signs prior to treatment
- Insert #18 intravenous line
- Begin hydration with intravenous bolus of 500-1000 cc of NS or Ringer's Lactate, given over 30 minutes, followed by Ringer's Lactate or NS at 120 cc/hr
- NPO while having contractions
- After initial dose of nifedipine, vital signs q 15 minutes x 3 hours, then q 1 hour, including before and after each nifedipine dose
- Advise MD if systolic BP < _____ mmHg (to be specified by MD)
- Advise MD if diastolic BP < 40 mmHg
- Continuous fetal monitoring. If continuous fetal monitoring is not available, use intermittent auscultation by Doppler. Please refer to attached guideline or Appendix A for condensed guideline.
- Record side-effects.
- Laboratory tests on admission, if available:
 - CBC
 - Electrolytes, creatinine, BUN, glucose
 - Urinalysis and urine culture
 - Blood group (+/- x-match)

Potential side-effects

- Transient maternal hypotension (40%)
- Transient maternal tachycardia (40%)
- Headache (30%)
- Flushing (30%)
- Nausea
- Dizziness
- Palpitations
- Transient fetal heart rate changes (5%)
- Symptomatic or severe maternal hypotension (rare)

Antidote

Serious side-effects, including maternal hypotension, are rare.

For immediate reversal of the calcium-channel blocking effect of nifedipine, use calcium gluconate by slow intravenous administration. Please refer to Protocol G 113-02-54 for details ("Calcium gluconate for reversal of magnesium sulfate", attached).

Based on protocols from Ste. Justine's Hospital, 2005.

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