# Acute Angle Closure Glaucoma TX

**Using Hyperosmotics**

**Step one**: Instill one drop of 0.5% apraclonidine (Iopidine), 0.5% timolol (Timoptic) or 0.5% levobunolol (Betagan) followed by another drop of the same drug approximately 10 - 15 minutes later.

**Step two**: Have the patient slowly sip 4 - 6 ounces of oral 45% isosorbide solution (Ismotic) over cracked ice. This reduces the risk of vomiting. Isosorbide is the drug of choice because it may be used with all patients. Oral glycerine is contraindicated for patients with diabetes. The recommended dosage for isosorbide is 1.5 mg per kg of body weight. (1 kilogram = 2.2046 pounds.)

**Step three**: Measure intraocular pressure every 30 minutes after initiating therapy.

**Step four**: After intraocular pressure measures 45 mmHg or lower, instill one drop 2% Pilocarpine every 15 minutes for one hour. Pilocarpine will keep the intraocular pressure low. And, as indicated, in the CAI approach, a miotic pupil with a concurrent rigid iris is beneficial when performing the subsequent YAG iridotomy.

**Note**: Steps 1 & 2 are performed in quick succession.

**Hyperosmotics are contraindicated in the following cases:**
- severe renal disease
- severe dehydration
- acute pulmonary edema
- hemorrhagic glaucoma
- serious cardiac problems

**Using CAI's**

**Step one**: Administer 500 mg. acetazolamide. Because immediate effect is required, use two 250 mg tablets, not the 500 mg sustained-release sequel.

**Step two**: Instill one drop of 0.5% apraclonidine (Iopidine) followed by another drop of the same drug approximately 10 - 15 minutes later.

**Step three**: Instill one drop 0.5% timolol (Timoptic) or 0.5% levobunolol (Betagan) followed by another drop 10 - 15 minutes later.

**Step four**: Measure intraocular pressure every 30 minutes after initiating therapy.

**Step five**: After the intraocular pressure measures 45 mmHg or lower, instill one drop 2% Pilocarpine every 15 minutes for one hour. Pilocarpine will keep the intraocular pressure low. The miotic pupil with rigid iris is beneficial when performing the subsequent YAG iridotomy.

**Note**: Steps 1 - 3 should be performed in quick succession.

**Carbonic Anhydrase Inhibitors are contraindicated, or used with great caution, in the following cases:**
- sulfonamide sensitivity
- renal impairment
- pregnancy
- chronic obstructive pulmonary disease (COPD)
- bacteriuria
- previous bladder surgery
- kidney calculi (stones)
The Hyperosmotic Solutions

Glycerin (Osmoglyn)  
most commonly used for initial treatment  
of acute angle closure glaucoma  
50% lime solution

Isosorbide (Ismotic)  
45% vanilla-mint flavored  
oral solution.

Both Glycerin and Isosorbide lower IOP  
within 30 - 60 minutes.  
Both should be served over ice to  
make it easier for the patient to tolerate.

Side Effects of Oral Hyperosmotics

CNS: vertigo, lightheadedness,  
lethargy, headache, confusion.

Gastrointestinal system: gastric discomfort,  
diarrhea, anorexia, nausea, vomiting.

Cardiovascular system: hypertension, arrhythmias  
stroke, cardiac arrest, especially in patients with a  
cardiac history.

Others: hyperglycemia, glucosuria, and  
ketoacidosis (during glycerin therapy only).

Drug interactions: no significant interactions.

The Carbonic Anhydrase Inhibitors:

Acetazolamide (Diamox)  
125 mg Tablet, 250 mg tablet & 500 mg  
sustained release capsules (Diamox Sequels)

Methazolamide (Neptazane)  
25 mg tablet or 50 mg tablet  
(not as likely to cause drug interactions as  
acetazolamide)

Dichlorphenamide (Daranide)  
50 mg tablets  
(worst of the CAI's for more frequent and more  
severe adverse reactions.)

Side Effects of Carbonic Anhydrase Inhibitors:

Eyes: transient myopia (up to 7.0 Diopters)  
CNS: drowsiness, paresthesia, confusion  
G. I. System: nausea, vomiting, anorexia, altered  
taste  
Genitourinary System: crystalluria, renal calculi,  
hematuria.  
Hematologic System: aplastic anemia, hemolytic  
anemia, leukopenia.  
Skin: rash.  
Others: hyperchloremic acidosis, hypokalemia,  
asymptomatic hyperuricemia.  
Drug Interactions: Potassium-wasting drugs such as  
thiazide and loop diuretics will increase hypokalemic  
effects. Watch for arrhythmias and atrial fibrillation  
in patients who are taking cardiac glycosides. CAI-  
induced electrolyte imbalances can prolong the  
action of amphetamines, tricyclic antidepressants &  
quinidine, increasing toxicity. Patient's on lithium  
therapy will excrete serum lithium faster than usual  
weakening the drug's antidepressant effect.  
Methenamine reduces effectiveness of  
acetazolamide.  
Avoid concomitant use of these two drugs.

Compiled from the Dec. 1994 Optometric Management:  
Putting Oral Glaucoma Therapy to Work, Gary E. Oliver, OD  
Controlling Glaucoma with Oral Drugs, Robert L. Walker, OD