

Tonometry by Goldmann Applanation

Purpose: To measure intraocular pressure (IOP) using slit lamp applanation tonometry.

Equipment: Slit lamp with applanator, cobalt blue light filter, and fluorescein eye drops.

Notes:

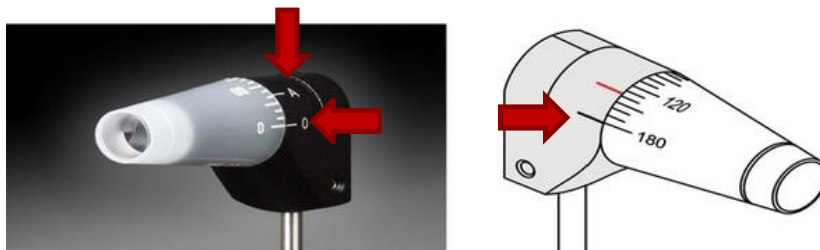
- Measure without correction (no contacts), with room lights off.
- Explain the procedure to the patient to ease discomfort and set expectations.
- Perform this test after tono-pen if both methods are used.

Cautions:

1. Fluorescein may stain clothes (usually washable, but permanent if dry-cleaned).
2. Fluorescein stains soft contacts; remove lenses before testing and rinse eyes before reinsertion.
3. Avoid pressing on the globe when holding eyelids open to prevent false high readings.
4. Remind patient to breathe normally to avoid false high readings.
5. Larger patients may need the slit lamp positioned lower and farther to avoid straining.
6. Multiple applanations can cause false low readings by displacing aqueous humor.
7. Do not slide the applanator across the cornea.

Testing Process:

- Disinfect the prism with alcohol; dry with tissue or wait 2 minutes for evaporation to avoid corneal injury.
- Ensure the white marker on the prism holder aligns with "0" on the prism head.
- For astigmatism >3 diopters, align the prism with the patient's minus cylinder axis (90° from plus cylinder), matching the red line or "A" on the prism holder.



- Ensure the measuring dial is set between 1 and 2 for most patients to minimize time on the eye.
- Wash hands thoroughly or use sanitizer; gloves optional afterward.
- Instill fluorescein drops in each eye; have the patient gently wipe excess without absorbing too much.
- Set magnification to 1x or 10x to avoid mire distortion.
- Use cobalt blue filter; set light beam wide and bright.
- Align prism and set illumination arm at 40°–60°; check alignment through oculars.
- Position patient comfortably at the slit lamp with chin down, forehead against rest, and lateral canthus aligned with marker.

- Instruct patient to fixate on a spot, open eyes wide, and blink a few times before measurement.
- Slowly move the slit lamp base forward, keeping joystick slightly back to maintain control and keep prism centered on cornea.
- Look through oculars and advance the slit lamp with joystick until bright green mires appear.
- For small adjustments, stay on the eye; for larger corrections, pull back, reposition, then return.
- Turn the measuring dial until the mires just touch on the inside.

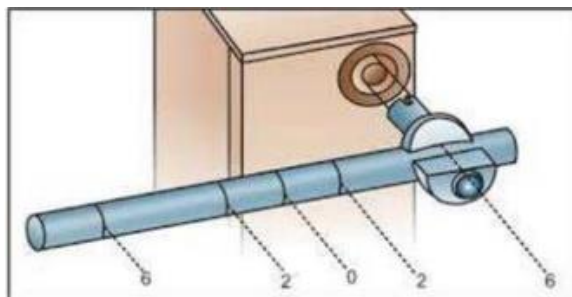


Example of IOP with perfect alignment



Example of IOP reading of 14 mmHg

Calibration:



There are three calibration settings: 0, 20, and 60 mmHg.

1. Turn the dial on the tonometer fully down—it should display '78' and allow the head to fall backward (toward the examiner).
2. Place the calibration bar aligned with the center line (0 mmHg) and lock it in place.
3. Slowly turn the dial forward; at the '0' reading, the arm should fall forward (toward the patient).
4. Move the calibration bar to align with the next line (20 mmHg) and lock it.
5. Continue turning the dial toward '2'; the arm should fall forward again at this point.
6. Align the calibration bar with the outer line (60 mmHg) and lock it.
7. Turn the dial toward '6'; the arm should fall forward once more.

If the arm doesn't respond within 1 mmHg at any setting, ensure the prism tip bar is properly clicked in and secure before troubleshooting further.



Ensure the calibration bar is set precisely. If all adjustments are correct and the arm still doesn't respond within 1 mmHg, submit a trouble ticket to biomed (Pablo Rico) for recalibration. Calibration should be performed monthly and recorded in the calibration log.

To document Goldmann applanation tonometry in Epic, go to "Tonometry (T)" under the Ophthalmology Exam.

Enter the IOP values, select 'Applanation' as the method, and the time will auto-fill.

Add any notes as needed (e.g., "Pt refused," "squeezing," etc.) in the 'Note' section.

Documentation:

The screenshot displays the 'Ophthalm Exam' form in the Epic EMR system. The 'Tonometry' section is highlighted with a red box. It includes fields for 'Right', 'Left', 'Method', and 'Time'. The 'Method' dropdown is set to 'Applanation'. The 'Time' field is auto-filled. Below the 'Tonometry' section, there are fields for 'Pachymetry' (Right, Left, Date) and 'Gonioscopy' (Right, Left). The form also includes sections for 'Visual Acuity', 'Pupils', 'Visual Fields (CVF)', 'Extraocular Movement', and 'Neuro/Psych'. The 'Fundus' section is visible on the left side of the form.