



Faculty of Science – UNSW Optometry Clinic

TONOMETRY

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1. Purpose/background – context for development of the protocol

This protocol will provide indications for the measurement of intraocular pressure (IOP) in the UNSW Optometry Clinic and the disinfecting procedure of tonometer prisms (non-disposable). Tonometer prisms regularly come into contact with mucous membranes and tears of patients. Proper disinfecting procedures are necessary to limit the spread of infection between patients.

2. Scope – to which positions/groups does the protocol apply

This protocol applies to all students, academic, professional staff in the UNSW School of Optometry and Vision Science practising within the UNSW Optometry Clinic.

3. Protocol statement

a. Indications for tonometry

Tonometry must be performed prior to pupillary dilation and gonioscopy (see *Protocol for Dilated Fundus Examination* and *Protocol for Gonioscopy*)

Indications for IOP measurement include (but are not limited to):

- All new patients* to establish a baseline for future comparison
- History of ocular hypertension
- Suspect or known glaucoma
 - Signs or symptoms that may be associated with glaucoma
 - History of retinal vein occlusion
 - Visual field changes suggestive of glaucoma
- Active anterior uveitis or suspected anterior uveitis
- Use of topical corticosteroid medication for anterior eye pathology
- A recent or history of ocular trauma. If contact procedures are contraindicated consider non-contact tonometry
- Unexpected loss of visual acuity
- Transient visual loss
- Unexplained ocular pain
- Unexplained headaches
- Diabetes

*Measuring intraocular pressure (IOP) is not a routine part of the eye examination of the infant/toddler (<3yo) or pre-school children. Measurement of IOP is difficult and the results often are unreliable but should be assessed when ocular signs and symptoms (e.g., corneal edema, increased corneal diameter, tearing, and myopia) are present. In these cases if reliable assessment of IOP is impossible, referral to an ophthalmologist testing under sedation is indicated.

The measurement of IOP in primary school-age children can be successful with either applanation or noncontact tonometry. Although the prevalence of glaucoma is low in this population, a baseline measurement at this age is valuable.

b. Relative contraindications for contact tonometry

- Corneal or conjunctival inflammation or infection
- Significant corneal abrasions or erosion
- Significant epithelial basement membrane dystrophy
- Lacerated or perforated globes
- Hyphaema
- Known sensitivity to local anaesthetics

In some cases noncontact tonometry or tonometry with disposable tonometers prisms may be suitable.

c. Location of equipment

Optometry students are to provide their own tonometry prism. It is expected that Supervising Optometrists will use the equipment of the student they are supervising.

Disinfecting solution (diluted household bleach - sodium hypochlorite) can be found in a labelled glass bottle above the desk in the supervisor's consulting room or equipment room.

Saline bottles, individual solution containers and tissues are found in each consulting room.

Disposable tonometer prisms are available in the Clinic. Students or Supervising Optometrist may request this from the Key Clinician during student clinics if required.

Topical anaesthetic is kept in the fridge located in the Staff Optometrists Office. Preservative-free minims are also available.

d. Preparation for tonometry

- i. History:
 - Allergic reactions and drug sensitivity
 - General health
- ii. Slit lamp examination:
 - Van Herrick assessment of angle
 - Rule out any contraindications of tonometry as listed in Section 3b
- iii. Inform patient verbally (and in writing when required) of:
 - The likely effects of the anaesthetic drugs
 - The signs and symptoms of adverse reactions
- iv. Obtain patient consent
 - Patient permission **must** be obtained for tonometry following explanation of the procedure
 - Tonometry must not be performed if the patient does not give permission
 - *Refusal of Examination Procedure* signed by patients who refuses to have tonometry performed, despite the recommendations of the Supervising Optometrist and/or Staff Optometrist.
- v. Disinfect contact surface as appropriate
- vi. Instillation of anaesthetic drug:
 - To be instilled only with Supervisor monitoring
 - Check correct drug and concentration, drug expiry date, date of opening bottle and colour of solution

- Avoid dropper tip contact with patients' lids/lashes
 - Have patient close eyes and perform punctal occlusion to minimise systemic absorption
 - Monitor patient for signs or symptoms of adverse reactions following instillation of drops
 - Do not leave patient unattended
- vii. Record details of:
- Drug and concentration used
 - Date and time used
 - Quantity used
 - Any other necessary information

e. Procedure for disinfection of reusable tonometers prisms

1. Completely replace the tonometers prism disinfecting solution in the individual solution container at the beginning of each clinic
2. Place the prism in the container (tip end in). Ensure the prism tip is adequately covered by the solution
3. Leave the tonometer prism to soak for 5-10 minutes
4. Prior to use, thoroughly rinse the prism tip thoroughly with saline and dry with a fresh tissue
5. After use, use non-abrasive contact lens solution to clean the end of the prism and rinse with saline
6. Dry the prism with a fresh tissue
7. Repeat steps 2-6 for each patient
8. If fingers touch the solution when removing the tonometer prism, the solution should be changed. Otherwise, the solution should be changed twice a day
9. After the last patient repeat step 5 and 6 and store the tonometer prism dry
10. Any device used for soaking tonometers tips must be cleaned with soap and water each day

NB: In cases of suspected ocular infection, or if the patient has or is suspected to have Human Immunodeficiency Virus (HIV), Creutzfeldt-Jakob disease (CJD) or variant Creutzfeldt-Jakob disease (vCJD) a disposable tonometer prism should be used or non-contact tonometry is performed.

Alcohol swabbing is reported to cause damage to tonometer prisms, such as surface scratching and dissolving of the glue holding the tonometer prism together.

4. Roles and responsibilities

a. Students

It is the responsibility of the student to follow the procedure as outlined above including identifying additional indications for tonometry not listed.

b. Supervising Optometrists

Supervising optometrists are responsible for ensuring optometry students under their care follow the procedure.

The Supervising Optometrists are to make the final decision as to whether to proceed with tonometry of the students' patients in the presence of relative contraindications

The Supervisor should directly monitor students during instillation of drops.

The Supervisors are to collect the topical anaesthetic drops from the Staff Optometrists Office at the beginning of the clinic, discard any expired drops, store the drops appropriately during clinic such that they are kept drops out of reach of children and ensure drops are returned to the Staff Optometrists Office at the end of clinic.

c. Staff Optometrists

Staff Optometrists will follow the outlined protocol for fundus photography during consultations with private patients.

Staff Optometrists will ensure there is adequate supply of ophthalmic drops in the UNSW Optometry Clinic and that the drops are stored correctly. They will monitor the expiry date of drops and discard drops when necessary.

It is the role of the Resident Optometrist to ensure that there is sufficient disinfecting solution available within the UNSW Optometry Clinic. The Resident Optometrist will make up this solution by a 1:10 dilution of household bleach - sodium hypochlorite.

d. Clinic Director

It is the role of the Clinic Director to ensure the Clinic protocols are implemented in their entirety and review protocols as required.

5. References

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