

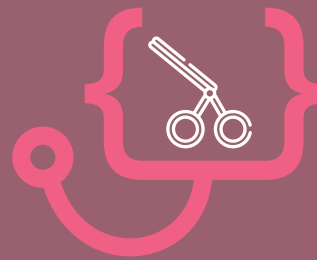


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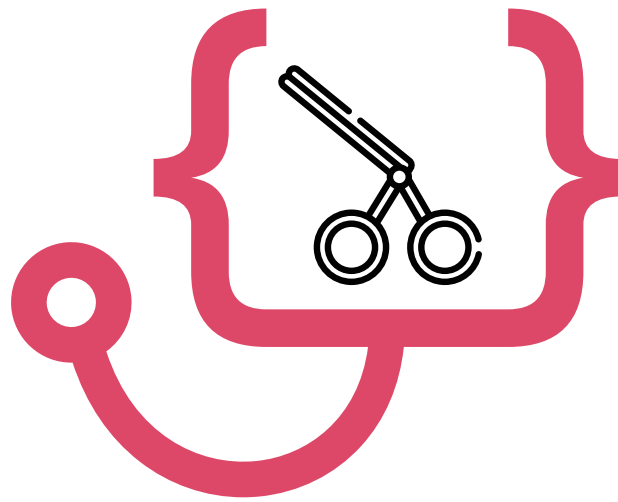


2022 Edition, Vol.III

# STANDARD TREATMENT WORKFLOWS *of India*

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STANDARD  
**TREATMENT**  
WORKFLOWS  
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# CONTENTS

- INTRODUCTION
- SPECIALITIES COVERED IN THIS EDITION

- **Ophthalmology**

- Cataract

- Diabetic Retinopathy

- Glaucoma



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# INTRODUCTION

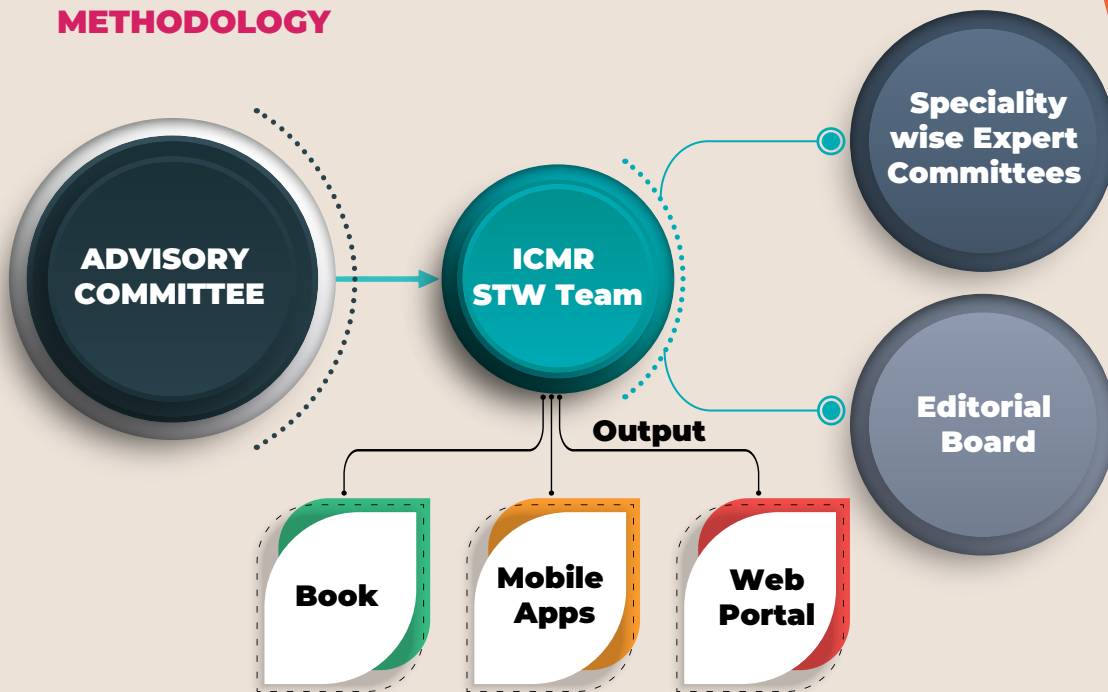
## GOAL

To empower the primary, secondary and tertiary health care physicians/surgeons towards achieving the overall goal of Universal Health Coverage with disease management protocols and pre-defined referral mechanisms by decoding complex guidelines.

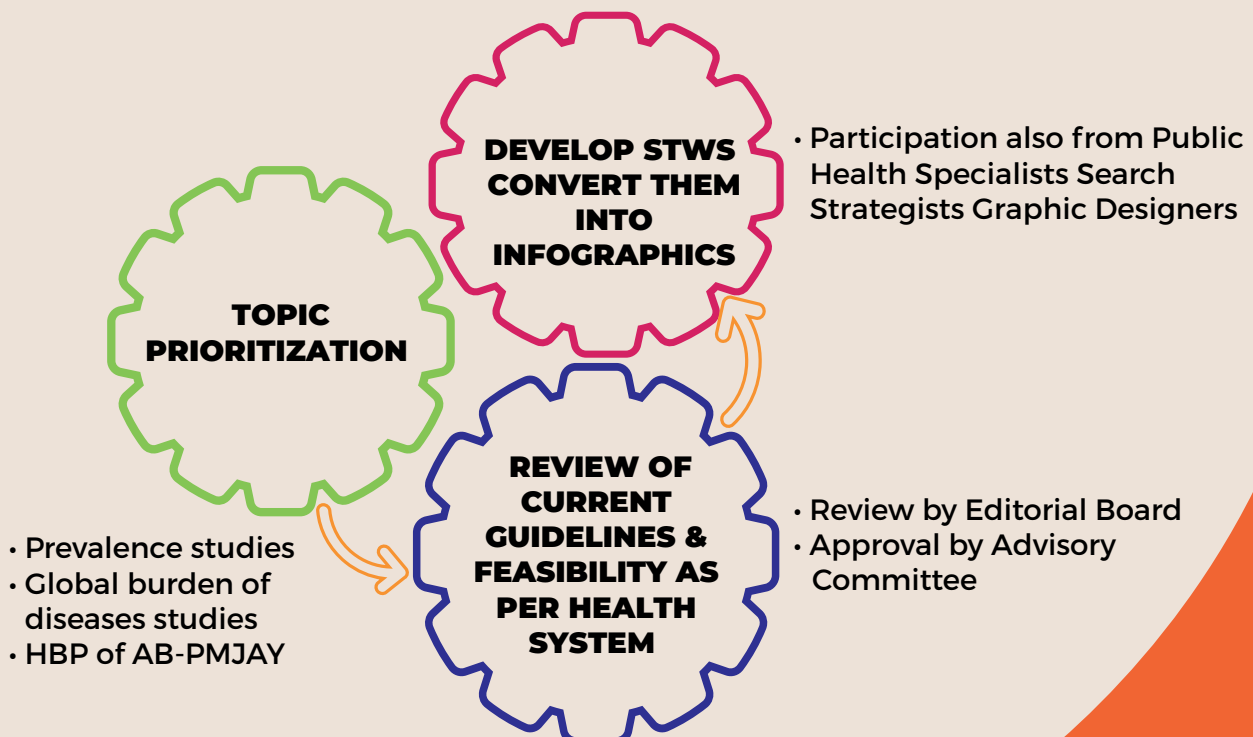
## OBJECTIVES

To formulate treatment algorithms for common and serious medical & surgical conditions for both outdoor & indoor patient management at primary, secondary and tertiary levels of India's healthcare system that are scientific, robust and locally contextual.

## METHODOLOGY



## PROCESS OVERVIEW





**OPHTHALMOLOGY**

## Standard Treatment Workflow (STW)

### CATARACT

**ICD-10-H25.9**
**SYMPTOMS**

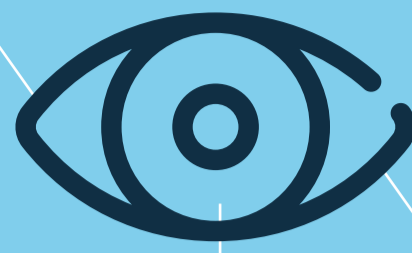
Decrease in vision, progressive change in power of glasses, glare, unicupular polyopia, white pupillary reflex

**SIGNS**

VA  $\leq$  6/9\*, not improving with pinhole or glasses, along with lens opacity

**SYSTEMIC ASSESSMENT**

Detailed medical history including history of allergy and review of records if available and assessment of general health status


**OPHTHALMIC EXAMINATIONS**
**PRELIMINARY EXAMINATION**

Torch, distant direct ophthalmoscopy

**ESSENTIAL**

Vision and refraction, intraocular pressure (IOP), slit lamp examination, pupillary reflexes, pressure over lacrimal sac area, fundus examination (if fundus examination is not possible due to dense cataract then ultrasound B-scan is advisable)

**DESIRABLE**

Slit lamp-specular reflection, ultrasound-B scan (if there is any clinical indication such as suspected associated vitreous haemorrhage or retinal detachment)

**CATARACT PRESENT**

**ESSENTIAL INVESTIGATIONS**

- Blood pressure
- Blood sugar (FBS, PPBS/RBS)
- Ophthalmic biometry (Axial length and keratometry for IOL power calculation)

**DESIRABLE INVESTIGATIONS**

- Lacrimal sac syringing
- ECG

**OPTIONAL INVESTIGATIONS**

- Xylocaine sensitivity test dose if h/o allergy
- Specular microscopy
- Serology testing\*\*
- Other investigations based on existing ocular & systemic disease

**INDICATIONS FOR SURGERY**

1. Clinically significant cataract causing visual loss enough to warrant surgery (BCVA in affected eye  $<$  6/12 or patient feeling visually handicapped even with BCVA  $\geq$  6/12). Advanced cataracts with severe visual loss BCVA  $<$ 6/60 or worse should be operated on priority
2. Clinically significant cataract enough to account for other visually disturbing symptoms such as glare, loss of contrast or polyopia which are bothersome enough for the patient to undergo surgery
3. Significant cataract hampering visualization of fundus for examination or treatment of retinal disorders
4. Cataract with narrow angle glaucoma where cataract surgery is required to improve control of IOP

**PROCEED FOR SURGERY IF INDICATED**

Discussion with patient about cataract, need for surgery, possible surgical options, expected outcome and prognosis

Advice for follow up as needed

**CATARACT WITH CO-MORBIDITY**
**CATARACT WITH OCULAR COMORBIDITY**

- Explain implications of associated corneal opacity/glaucoma/uveitis/retinal disease/optic nerve disease/amblyopia/squint/uncontrolled systemic disease
- Prioritize care according to the severity of the disease and need for treatment
- Refer to specialist for consultation/opinion/management and follow up

**CATARACT WITH SYSTEMIC COMORBIDITY**

- **Medicine specialist referral essential:**
  - Ischaemic heart disease (with request for monitored anaesthetic care and decision on withholding anticoagulant/fibrinolytics)
  - Systemic malignancy
- **Medicine specialist referral desirable:**
  - Hypertension
  - Diabetes mellitus
  - Chronic renal disease
  - Collagen vascular diseases
  - Thyroid disease

**CATARACT ABSENT**
**LOOK FOR OTHER CAUSES OF VISION IMPAIRMENT AND REFER AS NECESSARY**

- Corneal pathology
- Glaucoma
- Retinal disease
- Optic nerve disease
- Amblyopia

**MANAGEMENT**
**PHC/PRIMARY LEVEL**

- Detailed examination
- Refraction for BCVA
- Preliminary diagnosis
- Referral to Ophthalmologist if BCVA, vision with pinhole  $\leq$  6/12
- Postoperative follow up and compliance
- Timely referral in case of drop in vision or development of fresh symptoms after last follow up visit for post-operative complications such as PCO(VAO)/CME/Corneal decompensation/raised intraocular pressure/ uveitis/ displaced IOL/delayed endophthalmitis/ scleritis/ wound dehiscence etc.

**SECONDARY LEVEL**

- Cataract surgery
- Diagnose, manage or refer comorbidities such as Glaucoma, Diabetic Retinopathy, Corneal opacity, etc.
- Postoperative follow up, refraction and ensure compliance
- Manage PCO(VAO)/other complications or refer

**TERTIARY LEVEL**

- Cataract surgery
- Diagnose and manage comorbidities such as Glaucoma, Diabetic Retinopathy, Corneal opacity, etc.
- Postoperative follow up, refraction and ensure compliance
- Manage PCO/VAO/other complications

**QUALITY ASSESSMENT PARAMETERS TO BE RECORDED**

- Patient identifiers (age, gender, address)
- Preoperative vision, diagnosis of the eye to be operated
- Date of surgery, procedure name, implanted IOL
- Follow up vision
- Post operative visit date (2 -4 weeks post op visit), refractive status
- Cause of BCVA  $\leq$  6/12
- Positive indicator :BCVA  $\geq$  6/9 at 2-4 weeks or regains full visual potential
- Negative indicator: vision worse than pre-op or unexplained lack of improvement or serious complications (endophthalmitis/irreversible corneal decompensation/dropped nucleus/IOL dislocation/resurgery)

**FITNESS FOR SURGERY**

- General health stable
- BP  $\leq$  150/90mm Hg
- Blood sugar (mg/dl) FBS  $<$  150, PPBS  $<$  200 / RBS  $<$  200

**PRE-OPERATIVE PREPARATION** Topical broad spectrum antibiotics, QID for 1-3 days advisable

**Surgery to be performed in sterile OT following strict aseptic procedures and universal precautions.**

**SURGICAL PREPARATION** Periocular cleaning with 10% povidone iodine followed by instillation of 5% povidone iodine in conjunctival sac, rinse after 3 minutes. sterile surgical eye drape to be used

**SURGICAL OPTIONS**

1. Small Incision Cataract Surgery (SICS) with PMMA IOL.
2. Phacoemulsification (Phaco) with Indian foldable IOL (as per expertise, feasibility and availability)
3. Phaco with imported or premium foldable IOL (wherever indicated, as per expertise, availability and feasibility)
4. ECCE (large incision) with PMMA IOL

**POST OP CARE**

- Topical broad spectrum antibiotics, QID for 1-2 weeks or longer if required
- Topical steroids 4-6 times per day for 2 Weeks then taper over 2-4 weeks
- Follow up: 1 day, 1-2 weeks (optional) & 2-4 weeks after cataract surgery
- Prescription of glasses at 2-4 weeks after cataract surgery
- Refer to higher centre in case of adverse event

\* If vision does not improve with refraction, a clinical assessment must be made to assess if this is purely due to cataract, or ocular co-morbidity such as corneal pathology, glaucoma, retinal disease, optic nerve pathology or amblyopia. A decision must be taken based on history and clinical features and further referral to higher centre if necessary.

- Any patient with cataract and BCVA  $<$  6/12 in better eye qualifies as visually impaired and should be offered surgery.
- Patients with cataract and BCVA  $\geq$  6/12 may also be offered surgery depending on symptoms and visual needs.

\*\* A risk assessment by history and review of any risk factors for possible carrier of transmissible diseases such as HIV/HBsAg/HCV should be done and serology testing may be done if any risk factor is identified. In general, standard universal precautions must be taken in all cases.

**ABBREVIATIONS**

**BCVA:** Best corrected visual acuity  
**CME:** Cystoid macular edema  
**ECCE:** Extra capsular cataract extraction  
**FBS:** Fasting blood sugar

**IOL:** Intraocular lens  
**IOP:** Intraocular pressure  
**PCO:** Posterior capsular opacification  
**PMMA:** Polymethyl methacrylate

**PPBS:** Post prandial blood sugar  
**RBS:** Random blood sugar  
**SICS:** Small incision cataract surgery  
**VAO:** Visual axis opacification

**KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES**

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# Standard Treatment Workflow (STW) DIABETIC RETINOPATHY (DR)

## ICD-10-E11.31

### KEY POINTS

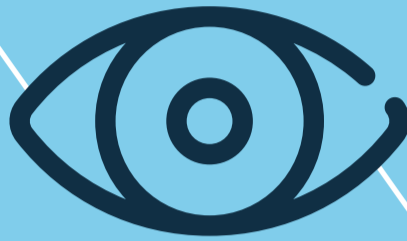
Diabetic retinopathy can be asymptomatic in early as well as advanced stages

Every newly diagnosed diabetic should be screened for retinopathy at the point of detection of diabetes and thereafter annually or more frequently as required by the retinopathy grade

### PRELIMINARY SCREENING

#### HISTORY

- Duration of diabetes.
- Compliance with treatment and blood sugar monitoring
- Any visual complaints
- Any other systemic illness



#### EXAMINATION

Vision, refraction, ophthalmic examination including pupillary reflexes, IOP, dilated fundus examination with a direct/indirect ophthalmoscope

### DEFINITIVE DIAGNOSIS

#### ESSENTIAL

Slit lamp bio microscopy (retinal exam), ultrasound-B scan (when fundus not visible)

#### DESIRABLE

Indirect ophthalmoscopy  
Fundus photography

#### OPTIONAL

OCT, FFA, OCTA if indicated



TABLE 1: CLASSIFICATION OF DIABETIC RETINOPATHY

TABLE 2: CLASSIFICATION OF DIABETIC MACULAR EDEMA

DIABETIC RETINOPATHY	FINDINGS OBSERVABLE ON DILATED OPHTHALMOSCOPY	REFERRAL*	DIABETIC MACULAR OEDEMA	FINDINGS OBSERVABLE ON DILATED OPHTHALMOSCOPY	REFERRAL*
No Apparent retinopathy	No Abnormalities		DME Absent	No retinal thickening or hard exudates in posterior pole	Review in 1 year
Mild non proliferative DR	Micro aneurysms only	Refer to retina specialist	DME Present	Retinal thickening or hard exudates in posterior pole	Refer to retina specialist
Moderate non proliferative diabetic retinopathy	More than just micro aneurysms, but less than severe non proliferative DR	Refer to retina specialist	Mild DME	Retinal thickening or hard exudates in posterior pole but outside the central subfield of the macula (diameter 1000 µm)	Refer to retina specialist
Severe non-proliferative DR	Any of the following: • Intra-retinal haemorrhages (≥20 in each quadrant) • Definite venous beading (in 2 quadrants) • Intra retinal micro vascular abnormalities (in 1 quadrant) and • No signs of proliferative retinopathy	Refer to retina specialist	Moderate DME	Retinal thickening or hard exudates within the central subfield of the macula but not involving the centre point	Refer to retina specialist
Proliferative DR	Severe non proliferative DR and 1 or more of the following: • Neovascularization • Vitreous/ pre retinal haemorrhage	Refer to retina specialist	Severe DME	Retinal thickening or hard exudates involving the centre of the macula	Refer to retina specialist

\*For non ophthalmologist, any DR should be referred to retina specialist

#### INDICATIONS FOR URGENT REFERRAL

- Vision loss
- Hard exudates
- Haemorrhages

- Non - dilating pupil
- Blurred disc margins
- No view of fundus
- Absent Foveal Reflex

### MANAGEMENT

#### PHC/PRIMARY LEVEL

- Detailed history & examination
- Refraction for BCVA
- Preliminary diagnosis
- Referral to Ophthalmologist (as per Table no. 1 and 2)
- Counselling regarding metabolic control
- Preventive advice, counselling and regular follow up

#### SECONDARY LEVEL

- Refraction for BCVA
- Detailed work up including indirect ophthalmoscopy
- Diagnose, classify, advice (as per Table no. 1 and 2)
- Point to point guided referral
- Ensure follow up and compliance
- Counselling regarding metabolic control and systemic comorbidities (hypertension, and nephropathy)

#### TERTIARY LEVEL

- Diagnose, classify, advice (as per Table no. 1 and 2)
- Intravitreal injections/laser photocoagulation/vitreoretinal surgery
- Ensure postoperative follow up and compliance including collaboration with district hospital ophthalmologists
- Counselling regarding metabolic control

#### INDICATION FOR SURGERY

- Sudden vision loss
- Clinically recognizable macular edema
- Rubeosis iridis
- Proliferative DR

#### FITNESS FOR SURGERY:

- General health stable
- BP ≤ 150/90mm Hg
- Blood sugar (mg/dl) FBS < 140, PPBS < 180 / RBS < 200

**INTERVENTION:** Pre-op topical broad spectrum antibiotics, QID for 1-3 days

**SURGICAL PREPARATION:** Periocular cleaning with 10% povidone iodine followed by instillation of 5% povidone iodine in conjunctival sac, rinse after 3 minutes, wipe, aseptic precautions, Sterile surgical eye drape

#### QUALITY ASSESSMENT PARAMETERS

- Patient identifier, age/ gender
- Grade of DR
- Pre operative vision, diagnosis
- Follow up vision

### ABBREVIATIONS

**BCVA:** Best corrected visual acuity  
**DME:** Diabetic macular edema

**FFA:** Fundus fluorescein angiography  
**IOP:** Intra ocular pressure

**OCT:** Optical coherence tomography  
**OCTA:** Optical coherence tomography angiography

### REFERENCE

1. Guidelines for diabetic care in India, International Council of Ophthalmology, January 2015 ([https://www.iapb.org/wp-content/uploads/ICO-Guidelines-for-Diabetic-Eye-Care-Adapted-to-India\\_VISION-2020-India.pdf](https://www.iapb.org/wp-content/uploads/ICO-Guidelines-for-Diabetic-Eye-Care-Adapted-to-India_VISION-2020-India.pdf))

### KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

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# Standard Treatment Workflow (STW)

## GLAUCOMA

ICD-10-H40.9

### KEY POINTS

Glaucoma can be asymptomatic

Can lead to irreversible vision loss if not treated in time

 Everybody  $\geq$  40 years age to be screened

Everybody with a family history of Glaucoma to be screened

### SCREENING CRITERIA

#### HISTORY TAKING

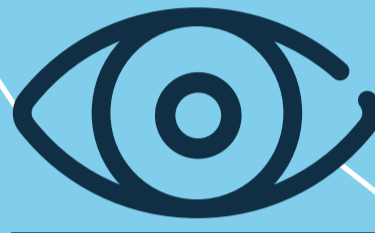
- Unilateral intermittent headache, blurring of vision, eye pain, coloured haloes
- Previously diagnosed /glaucoma suspect
- Treatment history - medical/surgical/laser and compliance with medication/follow up

#### SIGNS

- Abnormalities of optic nerve head (Cup to disc ratio  $>$  0.7; asymmetry  $>$  0.2)
  - IOP\*  $>$ 20mmHg
  - Evidence of ocular co-morbidities that could lead to secondary glaucoma
  - Torch light examination : on shadow test - shallow anterior chamber and Iris changes (Iris atrophy and sphincter pupil atrophy)
  - Visual field defects
  - Evidence of previous surgery or laser
  - Evidence of intermittent angle closure glaucoma
- \*if normal but associated with other features think of normal-tension glaucoma

#### HISTORY

- Highest baseline IOP before any treatment
- Systemic Hypertension, Cardiovascular diseases, Transient ischemic attacks, DM
- Systemic and ocular medications used
- Any OTC medication especially steroid for allergy
- Any ocular trauma



#### DEFINITIVE DIAGNOSIS

#### EXAMINATION

- Vision
- Refraction
- Ophthalmic examination including pupillary reflexes
- IOP
- Fundus examination
- Anterior chamber depth with direct ophthalmoscope/ slit lamp biomicroscope with 90D

#### ESSENTIAL

Slit lamp bio microscopy, AC Depth, gonioscopy, Pupillary reflex, Estimation of IOP (3 measurements), Visual field assessment

#### DESIRABLE

Diurnal variation. Central Corneal thickness

#### OPTIONAL

UBM, OCT, HRT, GCC for RNFL thickness

#### EXAMINATION IN OPD

 Cupping  $>$ 0.7, Asymmetry  $>$ 0.2, Notch

Shallow AC

**TONOMETRY** (repeat twice) + Gonioscopy

IOP 14-18 mmHg

 IOP  $>$ 20 mmHg

 Open angles  
POAG Suspect

 Narrow angles  
PACS/PAC

 Narrow angles +  
PAS PACC

 Open Angles  
POAG

BE Yag PI

Perimetry + baseline IOP (preferably morning and evening) to determine 'Target' IOP

#### SUGGESTED MANAGEMENT PROTOCOL BASED ON IOP

 $<$ 25 mmHg  
First line  
drug-Prostaglandins/ $\beta$ -Blocker (look for 15% IOP)

 25-30 mmHg  
First line  
drug-Prostaglandins/ $\beta$  Blocker

 $>$  30mmHg  
Prostaglandins +  
 $\beta$ -Blocker+ Tab  
Diamox 250mg  
TDS only x3 days

 Review 2 weeks/  
switch to another  
drug if nonresponder

 Review 10  
days+another  
drug if required

 Review 10 days  
add brimonidine  
if required

 Review after every  
4 mths if 'target'  
IOP achieved

 Review after every  
3 mths if 'target'  
IOP achieved

 Review after  
every 3 mths if  
'target' IOP  
achieved

#### Fitness for Surgery

- General health stable
- BP  $\leq$  150/90mm Hg
- Blood sugar (mg/dl) FBS  $<$  140, PPBS  $<$  180 / RBS  $<$  200

### MANAGEMENT

#### PHC

- Evaluate for open angle(deep AC), narrow angle (shallow AC) with torchlight
- Detailed history and examinations
- Refraction for BCVA
- Preliminary diagnosis
- Referral to Ophthalmologist as soon as possible if IOP  $>$  21, shallow anterior chamber or cup-disc ratio  $>$  0.7
- Counselling regarding spacing and phasing of glaucoma medication and reporting of side effects if any
- Counsel that surgery is not a cure but a means to lower IOP to stabilize the disease. The follow up is mandatory and will remain, regardless
- Counsel that stabilization of disease is available with regular treatment and follow up

#### DISTRICT HOSPITAL

- Refraction for BCVA
- Detailed work up including, Slit lamp examination & AC Depth, IOP, Optic nerve head examn
- Gonioscopy, fields and Diagnose, classify, advice as per Flow chart. point to point guided referral
- Surgical intervention such as Yag PI and Trabeculectomy
- Counselling regarding spacing and phasing of glaucoma medication and reporting of side effects if any.
- Counsel that surgery is not a cure but a means to lower IOP to stabilize the disease. The follow up is mandatory and will remain, regardless
- Counsel that stabilization of disease is available with regular treatment and follow up

#### TERTIARY CARE

- Detailed work up as above
- Optional investigations such UBM, OCT, HRT, GCC for RNFL thickness when necessary
- Surgical intervention, YAG Pi, Trabeculectomy, any other advanced procedure such as tube shunts.
- Ensure Postoperative Follow up and compliance including collaboration with district hospital ophthalmologists
- Counselling regarding spacing and phasing of glaucoma medication and reporting of side effects if any.
- Counsel that surgery is not a cure but a means to lower IOP to stabilize the disease. The follow up is mandatory and will remain, regardless
- Counsel that stabilization of disease is available with regular treatment and follow up

#### RED FLAG SIGNS FOR URGENT REFERRAL

- Acute angle closure attack\*
- IOP\*  $>$  30.
- Loss of pupillary reflex with visual impairment.
- Single eyed patient with glaucoma

\* initiate initial therapy for acute attack of angle closure glaucoma oral diamox, iv mannitol and pilocarpine 2 percent tds if confirmed narrow angle before yag PI

**Intervention:** Consult flowchart, pre-op topical broad spectrum antibiotics, QID for 1-3 days

#### Aim of Glaucoma Management

- Achieve target IOP with minimal fluctuation (Refer NPCB Guidelines)
- Iridotomy in all primary angle closure patients
- Trabeculectomy or referral to higher center if target IOP not achievable

#### Special instruction for glaucoma medication:

- Punctal Occlusion'
- Not to squeeze eyes after instillation
- 1 drop in conjunctival sac

#### INDICATIONS FOR SURGERY

- IOP above target despite maximal tolerated medical therapy
- Inability to review regularly
- Unable to afford medications
- Progression of the disease on maximal tolerated medical therapy
- Non compliance

#### QUALITY ASSESSMENT

- Patient identifier, Age/ Gender
- Compliance with Follow up schedule and medications

### ABBREVIATIONS

**AC:** Anterior chamber  
**GCC:** Ganglion cell complex  
**HRT:** Heidelberg retina tomograph

**OCT:** Optical coherence tomography  
**NPCB:** National Programme for Control of Blindness  
**PI:** Peripheral iridectomy

**POAG:** Primary open angle glaucoma  
**RNFL:** Retinal nerve fiber layer  
**UBM:** High-frequency ultrasound biomicroscopy

### KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

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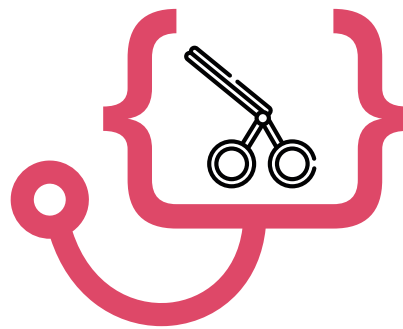
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**Web Portal**



**Google Play**



**App Store**

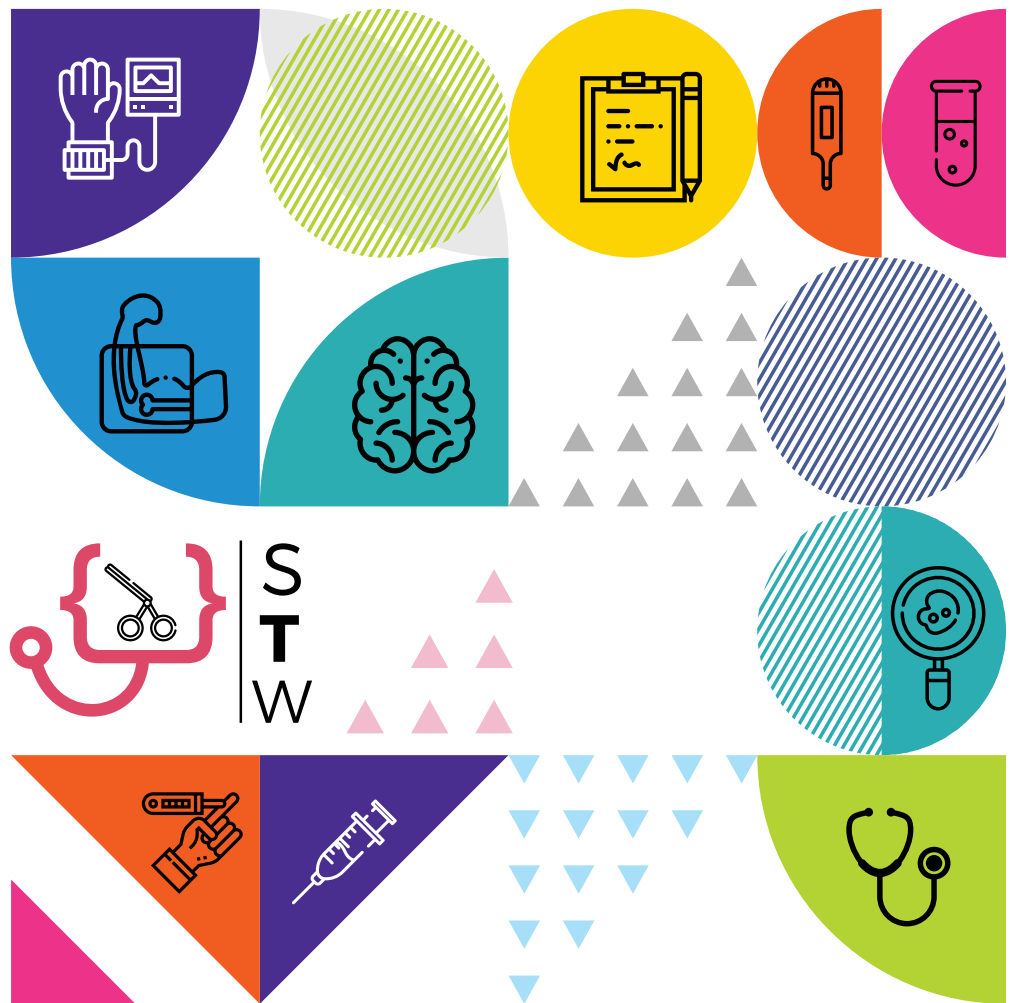


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