



NEWS LETTER

FROM THE DESK OF EDITORIAL BOARD

EDITORIAL BOARD



Dr. Uday R. Gajiwala
 M.S. (Ophthal)
 Divyajyoti Trust,
 Tejas Eye Hospital, Mandvi,
 Dist: Surat
 Mo: +91 9426125947
 Email: umadevang@yahoo.co.in



Dr. Amish I. Patel
 M.S. (Ophthal); FRF,
 Consultant Ophthalmologist &
 Vitreo Retina Surgeon,
 Eye Care & Laser Centre,
 Ahmedabad
 Mo: +91 9898083430
 Email: hetalamish@gmail.com

Dear Friends,

We believe that the readers are enjoying the details presented in the previous issues of Livewire newsletter. Infection control is a vast subject and we are making the effort to give you an overview of the same. More details are available in textbooks and manuals on infection control. However, some feedback about the same would encourage the authors more.

Having been oriented to the operation theatre (OT) layout in the previous issues, we are moving onto the preoperative preparation of the patient. Many times, the organisms from the patient's flora are found in the anterior chamber tap. This has proved to be causative in many cases of endophthalmitis. Though there are a couple of grey areas, the science has advanced to a great extent and our understanding of prevention has also changed. Whatever we practiced as preoperative workup in our days as resident doctors/interns way back in 1989-91, has disappeared completely. This shows the need to keep updated with the advances.

Once again, the article is written by a doctor from an NABH -accredited hospital, another article by a doctor from one of the largest eye care providers, particularly in remote rural area. As such, this will help the readers understand the protocol followed in a NABH -accredited hospital and also in a very high-volume centre. Dr. Rajesh Patel and Dr. Rohan Chariwala, having worked with us, are following the stricter and more stringent version of the protocol.

Please read carefully and reflect. Think over the differences in your protocol against the protocol followed by the authors. Try to understand the reasons. Ask us questions if your queries are not getting answered by the details given in the article. Your feedback is welcome.

Meanwhile, the "Manual for Prevention and Treatment of Endophthalmitis" is out. Please ask the CIPLA representative for your copy and do go through the same and let us know your feedback.

PREOPERATIVE PREPARATION OF THE PATIENT AT SCEH - A NABH - ACCREDITED HOSPITAL



Dr. Suneeta Dubey,
MS (Ophthalmology)
Associate Medical Director,
HOD of Glaucoma and Quality
Assurance,
Dr. Shroff's Charity Eye Hospital,
Delhi

At present, Dr. Suneeta Dubey is working as Associate Medical Director at Dr. Shroff's Charity Eye Hospital Delhi, India and also heading department of Glaucoma and Quality Assurance at Dr. Shroff's Charity Eye Hospital Delhi. After doing her MS (Ophthalmology) from the MGM Medical College, Indore, in 1992, Dr. Suneeta Dubey did a fellowship in glaucoma from the Wills Eye Hospital, Philadelphia, under the esteemed guidance of Professor Spaeth in 2001. She is also trained in the management of paediatric and refractory glaucomas through ORBIS International. She is a specialized instructor for the teaching and training of national and international trainees and fellow ophthalmologists under the hospital's medical education programme for the last 10 years.

She has more than twenty published papers to her credit and has been invited as faculty to over fifty national and international conferences. She has 22 years of dedicated experience in the field of ophthalmology and eradication of blindness from the community. She has received numerous awards for her contributions to scientific knowledge. The honors include the E T Selvam Award for the best poster presentation titled "Post-operative severe uveitis due to bacterial endotoxin in irrigating fluid mimicking endophthalmitis" at the AIOS Annual Conference, 2004 at Varanasi, a certificate for the best presentation in the glaucoma session for the paper titled "Surgical outcomes of congenital glaucoma" at AIOS 2007 held at Hyderabad, and the best oral paper award at the ICGS (International Congress for Glaucoma Surgery), November 2010, for "Outcomes of Pediatric Glaucoma". She was treasurer of the Glaucoma Society of India from 2013 to 2014. She is a member of the AIOS-NABH expert committee for formulating ophthalmic standards.

Dr. Shroff's Charity Eye Hospital (SCEH) is a 56-bedded, NABH-accredited tertiary eye care hospital located in the heart of central Delhi and has 5 secondary centres attached to it. Our hospital provides eye-health services to the people of Delhi and adjoining states of Uttar Pradesh, Uttarakhand, Haryana and Punjab. We have performed >50,000 ocular surgeries in the last decade, of which approximately 70% were cataract surgeries and the remaining 30% included speciality surgeries for pathologies related to glaucoma, cornea, retina and oculoplasty. Thus, we play a very important role in eradicating blindness in the society.

The process of preoperative preparation for a patient undergoing ocular surgery at our hospital begins from the time the patient is counselled for an intraocular surgery until the patient has undergone the surgery.

We divide this process broadly into three groups:

1. BEFORE FINALIZING SURGERY

2. A DAY BEFORE SURGERY

3. ON THE DAY OF SURGERY

1. BEFORE FINALIZING SURGERY

A general medical review aims to identify factors that have a bearing on the timing of surgery, patient's response to stress, intra-operative co-operation, and post-operative compliance.

Of special mention is a history of diabetes, blood pressure and a recent history of cardiac, pulmonary or cerebrovascular events. Diabetes mellitus and systemic hypertension are common in the population predisposed to operable cataracts. These conditions can adversely affect the course of surgery and the post-operative outcome. Hence, good control is desirable before surgery.

Patients undergoing ocular surgery at our hospital have a random blood sugar (RBS) measurement, blood pressure (BP) check-up and electrocardiogram (ECG) evaluation. The cut-off levels for RBS and BP are $\leq 200\text{mg/dL}$ and $\leq 160/90$ mmHg, respectively. If the RBS and BP measurements are above normal, then the patient is referred for a pre-anaesthetic check (PAC) evaluation, which is done by a physician and a team of anaesthetists.

The patient's systemic medication history is elicited with special reference to anticoagulants, anti-hypertensive and steroids. Anticoagulants are stopped 3–5 days prior to cataract surgery if a clear corneal incision under topical anaesthesia is not being planned and for all long-duration speciality surgeries. The physician is consulted before stopping anticoagulants. All patients are instructed to take their anti-hyperglycaemic and antihypertensive medications as per their schedule on the day of the surgery.

Eliciting a history of hypersensitivity to medications like sulpha drugs (acetazolamide), antibiotics, topical dilating agents, etc., is also very important.

2. A DAY BEFORE SURGERY

A patient deemed fit and assigned to be operated, is started on topical antimicrobial therapy (a broad-spectrum antibiotic eye drop four times a day) 1 day before surgery. The role of systemic antibiotics is controversial, but given their low cost and very few adverse effects, a broad-spectrum antibiotic with good ocular penetration (like Inj. Cefotaxime 1gm) may be given on the day of the surgery, especially for high-risk cases like trauma and long ocular surgeries like retinal surgeries. An anti-anxiety medication may be given to apprehensive patients. A xylocaine sensitivity test (XST) can be done as there are numerous instances of hypersensitivity reactions to it.

3. ON THE DAY OF SURGERY

Pupillary dilatation is achieved by instilling mydriatic agents such as tropicamide 1% plain eye drops or tropicamide 1% with phenylephrine combination eye drops every 20 minutes on the day of surgery starting one hour before the scheduled time. With recent advances in eye surgery and shorter duration of procedure, use of non-steroidal anti-inflammatory eye drops like Flurbiprofen to prevent intra-operative pupillary constriction is no longer needed. With modern self-adhering drapes, eyelashes need not be clipped, as they are kept away from the operating field and they actually assist in proper adherence of the drape. Patients are instructed to wash their face with soap and water and have a full head bath on the morning of surgery. A light meal on the day of surgery is preferred for patients undergoing surgery under local or topical anaesthesia.

A number of pre-operative factors are responsible for causing post-operative infections. Microorganisms present in the conjunctival cul-de-sac are responsible for causing endophthalmitis and post-operative infections. A conjunctival swab is taken to isolate any offending organism prior to surgery, especially in one-eyed patients. Use of pre-operative topical antibiotics like moxifloxacin eye drops 0.5% one day prior to surgery, periocular povidone iodine 10% for ocular adnexal cleaning and povidone iodine 5% eye drops in the conjunctival sac before commencing the surgery are a must to sterilize the conjunctival cul-de-sac. We do not use antibiotics in irrigating solutions or use subconjunctival or intracameral antibiotics. We use systemic antibiotics only for the treatment of endophthalmitis and not for prophylaxis.

In conclusion, adhering to these protocols has allowed patients of SCEH to achieve excellent visual outcomes and less post-operative problems, thus making SCEH one of the top ten eye care service providers in the country.

SUMMARY: ANTIBIOTIC PROPHYLAXIS – BASED ON AVAILABLE GUIDELINES

There are various guidelines available for antibiotic prophylaxis and to prevent endophthalmitis that can be adopted.

Based on the current evidence and guidelines (ESCRS, AIOS and VISION 2020 GUIDELINES), the preoperative antibiotic usage can be summarized as follows:

- Preoperative antibiotics can be given a day before surgery. They should be given more frequently on the day of surgery for reducing the bacterial load in the conjunctiva. Fourth-generation fluoroquinolones are the preferred drugs due to their broad spectrum of activity.
- Antibiotic in the irrigating fluid, though used in some countries, is not advised due to fear of the development of resistance.

- A subconjunctival antibiotic in the inferior fornix has been shown to achieve less concentration as compared to an intracameral antibiotic. However, it is still used in many centres considering that it may deliver a higher level of antibiotic to the anterior chamber compared to topical drops.
- Intracameral cefuroxime has been shown to reduce the rate of endophthalmitis in developed countries and has become a routine protocol in many European countries. However, in the Indian scenario, it has not been shown to be beneficial. The difference in the causative organisms, which differ between the two, may be responsible for the same. Intracameral moxifloxacin has been shown to be more beneficial in the Indian scenario. However, it is not a common practice to use intracameral antibiotics.
- There are no trials recommending the benefits of post-operative antibiotics. However, it is a protocol followed by the majority of surgeons. It has been noted that starting antibiotics on the same day of surgery has more benefit as compared to starting them the next day. Fourth-generation fluoroquinolones are preferred for the same. A short course is preferred. Tapering of antibiotics is discouraged for the fear of development of resistance.
- Systemic antibiotics are advised only for the treatment of endophthalmitis and not its prophylaxis. Intramuscular dosing is not advised.

PREOPERATIVE PREPARATION OF THE PATIENT



Dr. Rajesh U. Patel,
MS Ophthalmology
Anterior Segment and
Advanced Phaco Surgeon,
Sai Drashti Eye Hospital,
Bharuch.

Dr. Rajesh Patel has done his MBBS and MS (Ophthal) from the Baroda Medical College. He has worked as Senior Ophthalmologist at Sewa Rural, Jhagadia. He has also worked abroad at Acha Hospital, Cameroon, Central Africa and was involved in the Standard Chartered Bank and IAPB's joint venture "SEEING IS BELIEVING PROJECT" from 2009 to 2014. During his 12 years in this field, he has performed more than 15,000 varieties of eye surgeries. He has made several presentations at various conferences at the national and local level. He has authored and co-authored a few articles in peer-reviewed journals. He has many photographs published in Online Atlas of Ophthalmology to his name. He is also an excellent teacher.



Dr. Rohan Chariwala,
MBBS, DO
Anterior Segment surgeon,
Public Health consultant
and researcher,
Tejas Eye Hospital run by
Divyajyoti Trust,
Mandvi, Dist-Surat, Gujarat.

Dr. Rohan Chariwala has done his MBBS in 2005 and DO (Diploma in Ophthalmology) in 2008 from Medical College Baroda. He also did his MSc in Community Eye Health (Public Health for Eye Care) from London School of Hygiene and Tropical Medicine (LSHTM) from University of London, UK in the year 2011. He has also worked as an ophthalmologist at SEWA-Rural Hospital, an NGO, Jhagadia, Bharuch, Gujarat. He has an experience of more than 8000 eye surgeries of various kinds. He has presented many scientific papers and posters at state, national and international level. He has authored and co-authored a few articles in peer-reviewed journals. He has a passion for teaching clinical as well as surgical ophthalmology to ophthalmology students.

In ophthalmic practice, it is of the utmost importance to take all precautionary measures to prevent post-operative infections. To reduce the risk of post-operative infections, thorough care needs to be taken at each step of the operative procedure. The same is true for the preoperative preparation of the patient before the cataract surgery. Patient preparation begins in the consulting room and continues preoperatively in the operating room. Patient-related factors, sometimes, are responsible for isolated infection.¹

Preoperative evaluation of the patients

Ocular examination

○ Chief complaints and history-taking:

- Proper documentation of symptoms, findings and indications for treatment.
- Inform patient about the risks, benefits and expected outcomes of surgery.
- History of any allergic reaction to drugs (sulpha, lignocaine, cycloplegics) should be recorded

○ Complete ophthalmic examination

○ Physical examination

- Visual acuity and pinhole vision –presenting, and with available correction
 - Best corrected visual acuity (VA)
 - Ocular movement
 - Pupillary reaction
 - IOP measurement (ideally by applanation tonometer)
 - External examination
 - Slit-lamp examination (SLE)
 - Cataract grading
 - AC depth
 - Congestion/discharge
 - Complicated cases like phacodonesis, subluxation, pseudoexfoliation
 - ROPLAS test (or sac syringing) – not to be done on the day of surgery ROPLAS is sufficient²; sac syringing should be avoided as it may cause undue trauma, besides dislodging commensal/pathogenic micro-organisms that are otherwise dormant. (Sac surgery is done first and then intraocular surgery is done at least 2 weeks after sac surgery.)
 - Dilated fundus examination
 - USG B-scan in patients with mature cataracts, traumatic cataracts and vitreo-retinal disease is required to rule out posterior segment pathology
- ### ○ Conjunctival culture report is, preferably, required in the following cases:
- One-eyed patients
 - DCT done before cataract surgery
 - History of chronic infection, e.g. blepharitis
 - Lacrimal duct not patent /partially patent with clear fluid
 - Uncontrolled diabetes mellitus
 - Recently healed corneal ulcer
- ### ○ Adnexal infections need to be treated with systemic antibiotics.
- ### ○ Lid- and sac-related conditions such as entropion, trichiasis, dacryocystitis, etc., need to be treated first.

- **Antibiotics:** A patient deemed fit and assigned to be operated on should be started on topical broad-spectrum antibiotics. Studies show that antibiotics should be started 24 hours before surgery in order to achieve adequate drug levels in the eye^{3,5}.
- **Systemic antibiotics** are not commonly used as prophylaxis after cataract surgery⁶.
- **A- scan biometry** should be done on the previous day only and in both eyes, irrespective of the status of other eye (aphakia or pseudophakia). Keratometry reading should be taken three times at least, especially in case of an abnormal reading. Take an average of ten readings. These should be repeated if there is a difference in power of 1 dioptre OR if IOL power is either <18 or >23. Put a drop of antibiotic in each eye after each measurement. Also, if dealing with two patients, clean the probe between each check-up with spirit and allow it to dry.

MEDICAL FITNESS FROM PHYSICIAN FOR PATIENT-RELATED FACTORS:

- Diabetes mellitus
- Hypertension
- Cardiac problems
- COPD, asthma
- Other significant systemic illness
- Any septic foci should be identified and treated before hand

INVESTIGATIONS

- Blood pressure: Should be $\leq 150/90$ mm of Hg.
- RBS: PP²BS<180 mg%; FBS:<140 mg% on the day of surgery.
- Urine sugar: If done, should be nil; if positive, then check blood sugar haemoglobin level and weight for paediatric surgery.
- Routine medical testing (X-ray Chest, ECG, Blood Counts) before cataract surgery does not measurably increase the safety of the surgery.⁷

PRECAUTIONS REGARDING SYSTEMIC ILLNESS

- Surgery should be undertaken a minimum of 6 months after myocardial infarction.
- Check for wheeze/rhonchi and if present, give I.V. bronchodilators or steroids.
- No adrenaline should be used in the anaesthetic solution or phenylephrine for dilation in patients with Hypertension.
- Stretcher or wheel chair should be provided if needed.
- Cautery should not be used in patients with pacemakers.
- Stand by physician or anaesthetist (optional) in high-risk patients.
- Oxygen/nebulizer should be used before and during surgery if the patient is uncomfortable.

- No need to stop anticoagulant medications as once believed.
- Any skin infection or open wound should be treated first and the surgery may be deferred to a later date if there is active infection.
- Oral hygiene should be checked preoperatively. Dental infection must be ruled out. If present, it should be treated first and surgery should be delayed.

IN THE WARD ON THE PREVIOUS DAY

- ◆ **Cilia trimming:** The trimming of the eyelashes is, nowadays, not considered necessary before cataract surgery. The eyelashes should be properly covered by the sterile plastic drape. Such modern draping excludes the lashes from the surgical field and they actually assist in proper adherence of the drape. Schmitz et al⁶. reported that flushing the lacrimal drainage system and trimming the eyelashes had no demonstrable effect in preventing endophthalmitis.
- ◆ Where such drapes are not being used, the eyelashes must be trimmed on the previous day and after that, 5% povidone iodine should be applied over the lid margin as trimming the lashes will expose them to more organisms on the surface⁸⁻⁹.
- ◆ Patient cleanliness:
 - Head bath with antiseptic soap (along with a shave for male patients) the previous night
 - Haircut, if necessary, prior to surgery
- ◆ An informed consent must be taken after a detailed discussion of the prognosis and possible complications of surgery. This is an absolute must in today's scenario, to avoid subsequent allegations of not having fully explained the pros and cons and having performed bad or unnecessary surgery. The consent must have a witness, usually a blood relative. Guarded visual prognosis consent is taken separately in cases where the visual outcome is likely to be less than optimum.
- ◆ One-eyed, complicated surgery, etc., should be highlighted on the case paper.
- ◆ The eye to be operated upon should be marked with sticking plaster or by some other appropriate method.
- ◆ A special checklist for the preoperative work up can be prepared and put into use, which can be signed by the surgeon just before the surgery to ensure that nothing has been overlooked.
- ◆ No need to use systemic acetazolamide for routine use. It is to be used only when there is raised Intraocular pressure (IOP) preoperatively.

IN THE OPERATING THEATRE BEFORE SURGERY

- ◆ Slit-lamp examination should be performed by the operating surgeon before taking the patient to the theatre. Cancel surgery when there is unusual congestion or discharge in the conjunctiva
- ◆ Patient is allowed inside the block room preferably after taking a bath BUT the minimum requirement is a face wash with soap and water.
- ◆ Washed caps, gown and shoes should be worn.
- ◆ The eyebrows and eyelids are cleaned thoroughly with 10% povidone iodine before block.
- ◆ Phenylephrine 10% does not provide additional pupillary dilation compared with phenylephrine 2.5% and should not be used because of the greater risk of cardiovascular side effects.¹⁰ While a number of different dilating drops can be used, a typical regimen consists of a moderately long-acting anticholinergic agent (e.g. cyclopentolate 1% to 2%) and an adrenergic agonist (phenylephrine 2.5%) with 0.03% flurbiprofen¹⁰ two to four times every 10 to 15 minutes, beginning 30 minutes to 1 hour before surgery.
- ◆ After block, one drop of 5% povidone iodine is instilled in the selected eye.
- ◆ On the operating table prior to surgery, the conjunctival sac is again cleaned thoroughly with 5% povidone iodine and allowed to stay for a minimum of 3 minutes.

SUMMARY

Meticulous preoperative preparation helps in enabling a smooth peri-operative period and can help in preventing endophthalmitis.

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PREOPERATIVE PREPARATION OF THE PATIENT AT SADGURU NETRA CHIKITSALAYA



Dr. Elesh Jain

Sr. Consultant- Paediatric Ophthalmology and Strabismus, Administrator & Consultant- Public Eye Health Initiatives, Sadguru Netra Chikitsalaya, Chitrakoot, Madhya Pradesh

An ophthalmologist who has a deep passion for making quality eye care available for all, Dr. Elesh Jain has specialized in paediatric eye care at Aravind Eye Hospital, Madurai. He has performed more than 18,000 cataract, squint and other surgeries.

As Senior Professor of Ophthalmology, he also guides the academic and research activities at Sadguru Netra Chikitsalaya. He is the representative for the government postgraduate course offered at the hospital. He also heads the international fellowship programmes, which are run mainly for candidates from the International Council of Ophthalmology and other similar organizations.

Apart from his regular practice in the Department of Pediatric Ophthalmology and Strabismus, Dr. Jain leads the public eye health initiatives at Sadguru Netra Chikitsalaya.

He also has great interest in community-based eye health research and has published papers in peer-reviewed journals.

The infection control activities of a hospital draw a virtual barrier between pathogenic organisms, which are always on the rampage, and the unaware patients, many of them with relatively low immunity while under treatment in the hospital. Any breach of this barrier can cause functional disability to the patient and loss of credibility and loss of reputation, along with high economical cost, to the hospital.

Cataract is a common disorder of the aged persons and is found in more than 60% of the population above the age of 50 years. Cataract extraction is the most commonly performed intra-ocular surgery at Sadguru Netra Chikitsalaya (SNC) or at most of the eye hospitals. Endophthalmitis is the most dreaded post-operative condition, primarily not because of a procedural inadequacy that occurred during surgery but because of some virulent pathogens that have invaded the eye through a gap left unattended, ignored and unmonitored during routine infection prevention activities. Hence, the personnel who direct and drive the infection control activities have a crucial role to play because each infection is considered potentially preventable.

PREOPERATIVE CARE

Surgery is considered "benign violence" (Waldren1985), which is an appropriate term for the calculated and deliberate wounding of the human body or a selected part of it, when the goal is curing the disease. The patient may be or may not be mentally prepared for operation but his/her body biologically does not discriminate between a surgeon's scalpel and any other kind of trauma (like an assailant's knife). It is because of this reason that the patient's body has to be made ready for the trauma that will be caused by an operation. Not only do the physical facilities at the hospital need to be planned and prepared for operation but the patient also has to be prepared mentally and physically before the operation with the aim of increasing the success of surgery.

PATIENT PREPARATION MAINLY AIMS AT THE FOLLOWING:

1. Infection prevention
2. Patient safety
3. Best possible outcome of surgery

Safety concerns about patients have guided us in following the practice of doing a routine preoperative investigative test to reduce peri-operative morbidity by optimizing the preoperative status of the patient and to plan peri-operative management. However, a study says that the "Clinical usefulness of routine medical testing before cataract surgery does not reduce the rate of complication during the peri-operative period and that it would be more efficient not to request routine pre-operative tests unless they are indicated by the patients' history or physical examination." This debate is being eagerly followed to see whether it will result in a logical conclusion.

PROTOCOLS OBSERVED

The following protocols are observed here at SNC in case of cataract patients:

During history-taking, when the primary examination and clinical assessment is completed and any comorbid condition with/without any co-existing disease has been taken care of, the patient is attended to by a counsellor. The patient is given details about the general and specific aspects of the procedure and the risk involved. Consent papers are provided, and the patient is encouraged to ask questions and the terms used are explained, following which the patient is asked to sign the papers. Involvement of the patient and the family in the decision-making process helps immensely. Apart from the eye surgeons, a counsellor has a very critical role to play in both counselling and consent-taking.

Once the decision is made by the patient, he/she proceeds for the recommended necessary investigations. Then, after getting the results of the tests, the patient is again examined finally to decide whether he/she is fit or unfit for surgery and to chalk out a surgical plan. The patient is then cleared for admission. "OK" and "non-OK" patients are segregated in the ward.

WARD ADMISSION

As soon as the patient reaches the ward, nursing care starts and any systematic disease along with associated disease is attended to during the periodic visits of the clinicians. Any septic foci, if detected, are treated accordingly.

- Patient is allotted a bed.
- Eyelashes of the selected eye are trimmed (not in case of phaco patients).
- Oral antibiotics started (though their utility is debatable).
- One drop of betadine eye drops 5% is instilled in both eyes.
- Any systematic disease, if present, is attended to by a physician.
- Patient is allowed to rest.
- Scheduled meal is served.
- Antibiotic eye drops are started in both eyes (one drop QID).
- Antibiotic gargle given before going to bed.

IN THE WARD ON THE DAY OF THE OPERATION

- Instructed to evacuate bowel.
- Patient is asked to wash his/her face (along with a shave in case of a male patient).
- If the patient is willing, he/she is allowed to take a bath.
- Breakfast or a scheduled meal is provided.

- Patient is asked to change into clean clothes, which are provided by the hospital and colour-coded as per different specialities.
- Foot care is attended to in diabetics.
- Pre-surgical checklist is attached to the case file.
- Patient identification and eye marking is done.
- Anti-inflammatory eye drops are instilled (QID).
- Dilating drops are instilled and dilation observed.

IN THE OPERATION THEATRE

SNC has a unidirectional flow of patients, separate entries for staff and patients, and a lamellar flow of air through HEPA filters.

- Record of the patient is entered and the patient identified.
- Simultaneously, the patient is counselled to relax.
- Disposable caps and socks are provided.
- In the anaesthesia room, the remaining part of the surgical checklist is attended to.
- Eyelids, eyebrows and lid margins are wiped with a betadine 10% solution, using a bud swab, and allowed to dry.
- One drop of betadine 5% is instilled in the selected eye.
- The recommended anaesthetic is administered in the selected eye.

IN THE OPERATING ROOM

- The selected eye is cleaned with betadine, using a sterile bud swab, with special attention to the eyebrow and medial canthus.

- Draping is done.
- The selected eye is irrigated with a Balanced Salt Solution (BSS) solution.
- The surgical procedure is started as planned.

At SNC, the high volume of uptake of patients as such has never been an issue because, to address this volume, there has always been the required support structure and personnel. The issue, if ever, was how effectively, or not, were our quality protocol implementation processes able to cope with the increasing volume. Hence, supervision and monitoring procedures are continuously checked to aim at ensuring 'quality focus' and to not let it be diluted, diverted or distorted.

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Cipla Ltd. Regd. Office:

Cipla House, Peninsula Business Park, Ganpatrao Kadam Marg, Lower Parel, Mumbai 400 013. INDIA.