

ROTARY ARAVIND INTERNATIONAL EYE BANK ARAVND EYE HOSPITALS, MADURAI

About us:

The Rotary Aravind International Eye Bank was established in the year 1998 with the help of Rotary district 3000 and Rotary International 7620. It is affiliated to the International Federation of Eye & Tissue Banks, USA & Member, Eye Bank Association of India. The eye bank is housed at the 4th floor of Aravind Eye Hospital.

Objectives:

- Procure, process and distribute corneal tissue of the highest quality for corneal transplantation
- Provide eye tissue for research and training
- Provide support and grief counseling to donor families
- Promote public relation activities

Manpower:

Medical Director	–	1
Eye Bank Manager	–	1
Technicians	–	3

Strategies adopted to collect eye donations:

- Promotional activities
- Establishment of Collection centers
- Hospital Cornea Retrieval Programme

Promotional activities:

- Awareness lectures at schools, colleges, industries, and other voluntary organizations regarding eye donation
- Display of posters at prominent public places
- Pledging/registration
- Messages regarding eye donation in Television, Radio
- Articles highlighting the need for eye donation in Dailies
- Active participation in the National Eye Donation fortnight (25th Aug – 8th Sep) celebration by conducting various awareness activities

Establishment of collection centers:

The concept of the establishment of collection centers was made possible by the Eye Bank as it is having a distinct advantage of being attached to an Eye hospital, which has an excellent network of voluntary organizations through its eye camps. If planned properly, this model definitely yields good results and can be adopted by other eye banks to increase the number of eye donations.

Collection center:

It is set up by any voluntary organization (Rotary, Lions, etc) with the help of the eye bank in the same district or in a nearby district.

Personnel:

It consists of both

- Technical – General physicians/ Registered Medical Practitioner trained in enucleation
- Administrative – volunteers to carry out motivational and awareness activities. Is responsible for obtaining consent from the family and transporting the eyes to the eye bank safely

Activities:

- Carryout promotional activities in the serving district
- Liaison with the eye bank for technical support
- Proper documentation of the consent and donor information

- Ensuring safe transportation of the enucleated eyes as per the standards

At present the Rotary Aravind International Eye Bank has 26 active collection centers in 9 districts of southern Tamilnadu and, as per the last year statistics 78% of the total eyes collected are from these collection centers.

Even though the model of the establishment of collection centers forms an important strategy, the cost incurred for transportation of eye ball is much when compared to other strategies. Eye banks have to think in terms of reducing the cost incurred by the collection centers by framing action plans.

Performance:

Number of eyes collected (Sep '98 – Oct'02)	:	3767 eyes
Number of eyes utilized (Sep '98 – Oct'02)	:	1763 eyes

Almost, 47% of the total eyes collected are utilized for transplantation.

Distribution:

Tissues distributed to corneal surgeons, other eye banks, and to eye hospitals. At present, 5% of the corneas are distributed.

Training:

- To general practitioners in enucleation , packaging & transportation of eye balls
- To paramedics in assisting physicians during enucleation, and other technique like corneoscleral rim excision, eye bank maintenance and documentation
- To social workers and other volunteers in grief counseling technique

Research:

Tissues are provided to the Genetics & Immunology laboratory of Aravind Eye Hospital for stem cells culturing, age related cataract study, diabetic retinopathy research.

How is the eye bank funded?

Under the National Programme of control of blindness, the eye bank is eligible for a grant of Rs.50, 000 to meet the recurring expenses. As the eye bank is attached to Aravind Eye Hospital, the facilities like communication, Electricity, Transportation, use of Ophthalmologist and paramedical staff, medical supplies and other maintenance is shared with the hospital. As sale of donated eyes is prohibited legally and ethically, eye banks had to look for funds from Government or other social organizations

STANDARD PROCEDURES – EYE DONATION & EYE BANKING

Need:

In India approximately 190,000 persons are blind in both eyes and 590,000 persons are blind in one eye with corneal disorder according to the National Programme for Control of Blindness – World Health Organization survey (1986 – 89). There is an inherent demand for nearly one million eyes and an estimated 20,000 persons are added to this backlog each year. These statistics however may not reflect the actual magnitude of the problem. A significant number of the corneal blindness affects children. As emphasized by this statistics there is a great need for eye donation in India. Only a successful eye-banking program can solve this problem.

Accreditation:

An eye bank should be registered as per Organ Donation Act as a society. Periodically the eye bank will be evaluated /inspected by the accreditation committee for adherence to Medical standards of Eye Banking.

If the eye bank is set up by a voluntary organization and is registered under societies registration Act 1860 the government of India offers 1.5 lac as non – recurring and Rs. 50,000 as recurring grant. This is under the National Programme for Control of Blindness and is subject to being a life member of the Eye Bank Association of India. (Source: EBAI)

Manpower:

The Eye Bank should have the following personnel:

Medical Director:

- The Medical Director should be an Ophthalmologist and who has an expertise in external disease of the eye and corneal surgery.
- All the policies and procedures of the Eye Bank shall be under the supervision of the MD.
- The MD shall ensure that the Eye Bank operates in compliance with the Medical standards
- Training technicians in tissue procurement, preservation and tissue evaluation
- Training general practitioners in enucleation of donor eyes
- Determines the suitability of the tissue for transplantation

Eye Bank Manager:

- Responsible for day – day operation of the eye bank
- Creating awareness about eye donation through public education activities
- Using mass media for promoting eye donation
- Networking with local voluntary organizations and clubs like Lions, Rotary etc
- Liaison with the Government, EBAI and other eye banks
- Ensuring proper documentation of the activities
- Ensuring adequate Medical supplies for the eye bank
- Appreciation certificate to the donor family
- Thanks letter to the voluntary organization who motivated the eye donation
- Preparation of monthly reports, quarterly reports, and yearly report and mailing them to the appropriate authorities

Technical staff

- Attending eye donation calls along with the physician
- To perform corneal excision as per the direction of the Medical Director
- Storage of the cornea as per the direction of the Medical Director
- Perform serologic testing of the donor blood for HIV, HBsAg, and syphilis
- Maintenance of equipments & instruments
- Recording forms for the donor & recipient
- Cleaning and sterilization of the eye bank laboratory and equipments

At least one technician should be trained formally in enucleation, corneal excision, evaluation, serology procedures, aseptic technics, preservation procedures and other eye banking activities by the International Federation of Eye and Tissue Banks, USA.

Facilities:

Space:

- The laboratory must be a separate area with limited access
- The laboratory shall have a sink with drain and running water
- There must be stable electrical source
- Adequate counter space for preparation of donor material
- A reception area for engaging public

Appropriate documentation of the cleaning of the laboratory must be maintained and to be kept on file for a minimum of 3 years.

Eye Bank Laboratory:

Equipment & Instruments needed for an Eye Bank:

- Laminar Airflow - 1
- Refrigerator - 1
- Slit Lamp - 1
- Kerato Analyser - 1(optional)
- Abbott Quantum Analyser - 1
- Centrifuge - 1
- Quick wash - 1
- Enucleation instrument - 6 sets
- Excision instrument - 6 sets
- Telephone
- Furniture

Maintenance:

Cleaning :

Daily:

- Cleaning of floors twice a day with antiseptic solution (Micral diluted with water)
- All table tops and glasses with antiseptic solution once in a day

Equipment cleaning:

Laminar Airflow:

- Clean outer surface, inside walls and surface of the hood with 70% alcohol
- Do not touch the filter area
- Run the UV for 30 minutes before and after excision

Slit Lamp

Clean with 70% alcohol

The clamp and the lens area should be thoroughly cleaned

Refrigerator:

- All outer surfaces should be cleaned with antiseptic solution
- Inside trays should be cleaned with 70% alcohol
- A temperature controller has to be used to monitor the temperature +4c to +8c

Specular Microscope:

Should be cleaned with 70% alcohol Centrifuge:

Inner and outer walls to be cleaned with sodium hypochlorite

Instruments:**Instruments cleaning :**

- Wipe off the soil with gauze
- Soak in mild detergent solution for 2-3 hours
- Wash with soft bristled brush under running water
- Dry it
- Replace the tip of the sharp instruments
- Pack in the pouch
- Label for Autoclave indicator
- Steam autoclave for 1 hour at 270 degrees centigrade

Donor Screening

- The enucleating physician must review the medical records of the donor if available
- A physical examination of the donor should be done by the enucleating physician for signs of intravenous drug use

Contraindications:

The following are absolute contraindications for eye donation and the tissue from these patients should be rejected:

- Death of unknown cause
- Acute Viral Hepatitis
- Creutzfeldt – Jakob disease
- Septicaemia
- Jaundice
- Rabies, Tetanus, Cholera
- AIDS
- Congenital rubella
- Cancer in the eye

Relative Contraindications:

- Death due to poisoning
- Intraocular surgeries
- Leukaemias
- Burns of the body
- Extremes of age
- Obstructive jaundice
- Diabetes, tuberculosis
- Death in ventilators

Documentation of Donor Information:

All the information pertaining to the donor – age, cause of death, date and time of death, date and time of enucleation, details of physical examination, condition of the eye, hospital records, blood drawn details, has to be recorded in the Donor Information form. Each donor should be given a donor ID. It can be the name of the eye bank /year/ month/ serial number.

Method of Consent:

Documentation of legal consent for enucleation is essential for medico – legal purpose. Consent from 1 immediate next of kin of the donor and 2 witnesses are mandatory at the time of enucleation. Signatures from the next of kin and witness should be obtained in the consent form with their address for communication.

Procurement and Preservation Procedure:

Enucleation of the eye ball has to be done within 4- 6 hours of the death of the person.

Enucleation must be performed by a person who is a Registered Medical practitioner trained in enucleation. Using good quality surgical instruments can prevent problems during enucleation and as well minimizes postoperative complications in the recipient.

Enucleation Instruments:

- Eye speculum - 1
- Small toothed forceps –2
- Conjunctiva scissor –1
- Muscle hook-1
- Enucleating scissor –1
- Corneal needle holder –1
- Curved artery forceps – 1
- Enucleating spoon – 1
- Surgical gloves – 3
- Sterile normal saline
- Cotton Pads
- Torch
- Antibiotic eye drops (Genticyn)
- 4 “0” black silk sutures - 1
- Sterile moist chamber bottles - 2
- Betadine swabs – 2
- Vacutainer tube – 1(for blood drawing)
- 5 cc syringe - 1
- Bone wax – 2 (To arrest bleeding)

Enucleation Procedure:

- Scrubbing of the lids with betadine
- Instil two drops of 5% betadine and rinse with sterile saline
- Apply few drops of topical antibiotics
- Insert lid speculum
- Grasp conjunctiva and cut around cornea
- Bluntly dissect conjunctiva with scissors
- Isolate and cut superior medial and inferior rectus muscle
- Isolate lateral rectus muscle and clamp
- Cut lateral rectus muscle distally to clamp
- Insert enucleation scissors laterally and cut optic nerve with ¼ inch stump
- Elevate eye and excise remaining tissues
- Cut inferior and superior oblique muscles

- Place the eye in the moist chamber bottles
- Pack the socket with cotton or Prosthesis
- The lids can be sutured if needed

Drawing of blood:

- Jugular vein – Yields the greatest amount of blood, requires the most training and special equipment
- Cardiac puncture – Yields a moderate amount of blood, simple to perform. This site may be unreliable in case of multi or chest trauma.
- Femoral vein – Generally yields the smallest amount of blood but it is simple to perform. This site requires the least training or experience to locate.

Filling the tube:

Hold the plunger of the syringe firmly as you withdraw the needle and also as you pierce the rubber stopper of the container. This prevents blood from escaping the syringe. When the needle point enters the tube, the vacuum within the tube draws the blood in.

Tissue Evaluation:

The ultimate responsibility for determining the suitability of the tissue for transplantation rests with the transplanting surgeon.

Gross examination:

The corneal-scleral segment shall be initially examined grossly for clarity, epithelial defects, foreign objects, and contamination and scleral color.

Slit-lamp Examination:

The cornea shall be examined for epithelial and stromal pathology and in particular endothelial disease. Enucleated globes shall be examined in the laboratory prior to distribution and/or corneal excision. Information obtained with slit lamp biomicroscopic examination must be documented.

Specular Microscopy:

Specular microscopy is not necessary but may provide additional useful information in screening donor corneal tissue to determine suitability for transplantation. If the eye bank uses specular microscope, it must have a written procedure that includes how information obtained from specular microscopy is used.

Corneal excision procedure:

The removal of cornea from the eyeball must be performed under a laminar flow hood by a trained technician.

Corneal Excision Instruments:

- Artery forceps – 4
- Conjunctiva scissor –1
- Cornea scissor –1
- Toothed forceps – 1
- Iris forceps – 2
- 15 Blade – 2
- Gauze pieces – 10
- Antibiotic eye drops

1. Wash hands with soap or given antiseptic solution. Dry your hands and wear unsterile cap and mask and unsterile gloves.
2. Evaluate the globe and record the rating of the cornea in the cornea evaluation sheet. If the globes are the good and above good rating should confirm with the Medical Director- Eye Bank. Then place the globe inside the refrigerator (Globe for excision area; do not change the place)
3. Wipe the laminar air flow hood with filtered 70% alcohol inside the three vertical surfaces and the base of the working area. Do not touch the filter area space which is fixed above in the vertical downward flow laminar air flow hoods.
4. Then wipe the preservative media (either MK for short term and Optisol GS for long term preservation) with 70% alcohol and unscrew the bottle cap inside the laminar flow hood and slight lift up and just cover the media; do not kept

open. Then place the clean and fresh damp seal cover inside the left corner side. Then place the antibiotic solution to irrigate on cornea during excision to prevent dryness.

5. Then close the door and switch on U.V. radiation and the air flow for 25-30 minutes. Change your ordinary dresses and wear the special dresses (Pant and shirts) and wear the sterile cap and mask. Keep ready the bin inside and keep open and the sterile gloves should be put inside the sterile bin. Switch off the U.V. irradiation don't switch off the air flow. Then switch on the lights.
6. Take the whole globes to be excised from the refrigerator and wipe the container with alcohol and place inside the laminar airflow hood. Then wash your hands with hand scrub solution. Standard scrubbing technique: Wet your hands with the running filtered water and unscrew the hand scrub solution and apply the solution on your palm and close the bottle. Rub the hands right to left and vice versa from the finger tips to elbow. Repeat the step three to four times and wash hands under the running water. The water should be pored on from the fingertips to elbow. Make sure all surface are cleaned and washed well. After washing of your hands take the sterile instruments, place inside the laminar flow hood.

Preservation:

Use of short or Intermediate Term Preservation Medium:

Eye Bank shall use the MK medium or its equivalent (Available from laboratory of L.V.Prasad Eye Institute, which is supplied to life Institutional members of Eye Bank Association of India). The medium shall be used and stored according to the manufacturer's recommendations for temperature, date and other factors. The manufactured medium purchased and shipped to the eye bank shall be inspected for damage upon arrival. The lot number of medium used for each cornea shall be recorded on the tissue. The cornea scleral rim can be stored in MK for a maximum of 4 days.

Whole globe preservation:

Eye Banks that store whole eyes shall employ aseptic practice. Whole globes can be preserved in Moist chamber (MC) bottles at 4 degree centigrade. It can be preserved for 24 hours in MC.

Sclera preservation:

Eye Banks shall preserve scleral tissue aseptically. The selected preservation method must be documented in the eye bank's own procedure manual. A preservation date for scleral tissue shall be indicated.

Serology Testing:

In addition to collection of cause of death and other information of the donor, it is mandatory to collect 10cc of blood from the donor at the time of enucleation. Testing of donor's blood is an important aspect of standardization.

As recommended by the Eye Bank Association of America, the following three serology tests are to be performed.

HIV (Human Immunodeficiency Virus)

Human Immunodeficiency Virus has been detected in tears, conjunctiva and corneas from AIDS patient, although transmission via corneal transplantation has not been documented.

Hepatitis B surface Antigen (HBs Ag):

Hepatitis B virus was always suspected to be transmissible through cornea and 3 such cases were reported at the American Academy of Ophthalmology, Las Vegas, 1988. HBs Ag has been found in corneal donors and the virus is thought to be transmittable by corneal transplantation. The risk of HBV transmission was shown to be much greater than that for HIV transmission. Hepatitis

As both HIV & HBV are life threatening disease, the careful screening of donor blood is mandatory despite the lack of demonstrable transmission through corneal transplantation. Inability to test for these diseases in the donor presents serious risks, since the risk of infection by AIDS & Hepatitis through corneal transplantation is increasing.

Syphilis:

The main reason for instituting syphilis screening was the suggestion that it represented an independent risk factor for HIV – 1 infection and therefore, may serve as a surrogate marker for HIV infection. But there are evidences to suggest that the transplanted cornea does not transmit syphilis in an experimental model and that corneal storage medium renders Treponema Pallidum non – viable.

Infection Control and Safety:

- Sterilisation (UV exposure)
- Limited access
- Central air conditioning
- Scrubbing

Waste Disposal :

- Tissues & waste items to be incinerated

Documentation

- Message slip
- Consent Form
- Donor Information form
- Cornea evaluation sheet
- Tissue distribution form
- Keratoplasty report form
- Discard form

Promotional Activities:

I. Networking with Voluntary Organisations

- Identify target area within 15 kms of radius of the existing eyebank
- Identify a voluntary organization (Lions, Rotary or any other NGO) working in that area
- Calculating the population of the village/town within the 15 km radius
- Estimating death rate for the calculated population at the rate of 8 per 1000 population
- A minimum target of 2% is fixed for the club working in that area

Existing club	Villages/town	Population	Target @ 2%
L/c Salem	Namakkal village	5,814	2 eyes
	Salem town	2,43,104	78 eyes
	Salem village	3,70,707	118 eyes
	Salem	4,26,412	136 eyes
			334 eyes
L/c Edapaddi	Erode village	35,648	12 eyes
	Salem town	62,815	20 eyes
	Salem village	2,84,653	90 eyes
			122 eyes
L/c Mecheri	Dharmapuri village	24,297	8 eyes
	Mecheri	18,292	6 eyes
	Salem town	15,588	6 eyes
	Salem village	3,21,267	102 eyes
			122 eyes

II. Hospital Cornea Retrieval Programme: (HCRP)

What is HCRP?

Concentrating on deaths that happen in the hospital. This model is highly supported by the Government of India and Eye Bank Association of India.

Advantages:

- Younger, healthier corneal tissue is available than from donors who die of old age
- Donor health records allows better tissue evaluation
- Allows quicker eye collection
- Offers cost benefit

Selection of Hospitals:

- Multispeciality hospital
- 3-4 deaths in a day
- closer to the eye bank

Role of the Hospital:

- Memorandum of Understanding with the Eye bank
- Coordinate the grief counseling activities
- Permit the eye bank to use the hospital facilities like communication
- Permit the eye bank for the display of posters and other materials regarding eye donation
- Orientation to the hospital staff regarding eye donation & grief counseling procedure with the help of the eye bank staff

Role of the Eye Bank:

- Appoint counselors
- Orientation to the counselors about the need for eye donation
- Training to counselors in grief counseling
- Awareness lecture to the staff of the hospital

- Preparation of posters and other displays about eye donation for the hospital
- Preparation of training manual for the grief counselors

Selection / Training of counselors:

Counseling to motivate eye donation needs special aptitudes knowledge and techniques. Appeals have to be made to relatives of deceased patients during the period of grief and loss. And time is short Eye removal has to be performed within six hours of death. Relatives will also be very reluctant to accept any procedures within six hours death. Relatives will also be very reluctant to accept any procedures that will delay release of the dead body from the hospital. So a good counselor should:-

Have an aptitude for communication. The counsellor should be a good speaker with a natural qualities of patience and sensitivity.

- Be able to speak local languages. Fluency in local languages is important as the people the counsellor speak to could even be illiterate.
- Be aware of facts. The counsellor must be able to answer fully and truthfully, all questions they are asked about eye donation and to clear doubts in people's mind (Special training is being provided by the Eye Bank association of India)
- Be confident and convinced about the benefits of eye donation. The counselor should be fully aware of the need for eye donation to reduce corneal blindness. There should be no hesitancy or fear in approaching people for eye donation. The question: "How can I ask a person who has just lost a loved one for eye donation?" must be faced and overcome. For every mother who has lost a child there could be other mother of corneal blind children praying for vision. The request must be made without emotion and on behalf of such blind people. There should be sensitivity but with no sense of personal involvement.

Method of counseling for eye donation

There are probably no precise accurate methods for counseling that can be applied uniformly everywhere. Effective guidelines have to be evolved over a period of time. However, counselors must learn to change and adjust to local conditions customs and religious beliefs to be successful. But in light of the experiences of the member eye banks of the Eye Bank Association of India, the following steps can be suggested:-

Step No. 1

Counselors should ensure that patients / relatives are exposed to some background information on eye donation so that post-death counseling becomes easier. This can be done by displaying posters/brochures in prominent places around the hospital such as registration counters lifts waiting halls, etc. A direct message like 'Donate Eyes' should be avoided. Instead, it should say: 'If you wish to donate eyes. The hospital can help you. The decision whether to donate eyes or not should be left to the donor and relatives. The counselor's role should be supportive and to render assistance and to respect the decision whether Yes or No .

Step No. 2

Unless specifically asked, the counsellor must never mention or volunteer any information on eye donation to any patient or relatives. Eye donation is a subject that should be discussed only after death.

Step No. 3

Counselors in critical care wards must be especially sensitive to needs of patients near death and to the stresses undergone by relatives. Successful counselors have to win the confidence and trust of relatives if they are to be receptive to post-death counseling.

Step No. 4

It is important to choose the relative of the deceased to whom the option for eye donation is to be explained Surviving spouse, adult son or daughter adult brother or sister or parents are to be located. It will help if the counselor chooses a person or persons who look less emotional and less affected by grief.

Step No.5

The counselor should choose a location with adequate privacy to make the request about eye donation. A crowded ward beside the dead body will not be an appropriate spot to start a conversation wherever facilities are available; a clean bright

room with proper furniture would be a good resource. Extras like a neat tablecloth or a vase of flowers would add to the effectiveness.

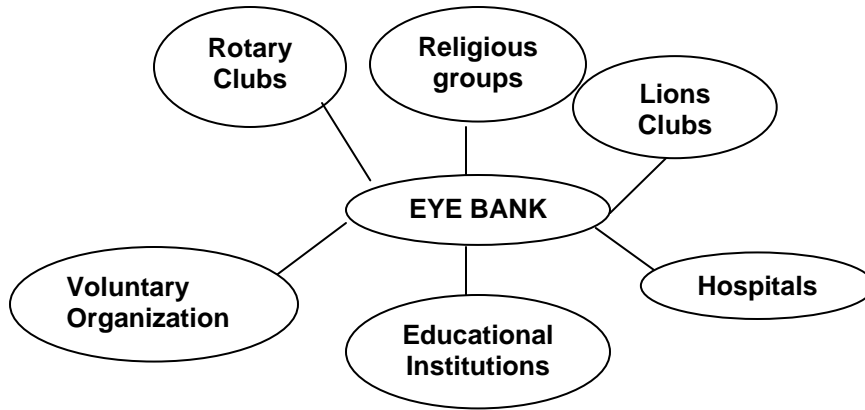
Step No.6

The sentences spoken by the counsellor can be rehearsed with colleagues to make them sound better to grieving people.

Each counsellor should try and develop a personal style.

NETWORKING:

The success of an eye bank depends on the increased number of eye donations. Eye Banks cannot function in isolation. It has to integrate and work with other agencies and organizations such as the Lions clubs, rotary clubs, voluntary and non-governmental organizations, educational institutions, and more importantly health care institutes for achieving its objective.



EYE DONATION CENTERS:

Part of a hospital or a health care facility

Staff:

- Paramedical personnel
- Volunteers in the village
- Physicians