

EYE BANKING and VISION 2020

The header is a solid blue rectangle with a wavy bottom edge. Below the rectangle, there are several overlapping, semi-transparent blue wavy lines that create a sense of movement and depth.

About 285 million people are
visually impaired
worldwide: 39 million are blind
and 246 million have low
vision (severe or moderate
visual impairment)




Preventable cause are as high
as 80% of the total global
visual impairment burden




15 Million Corneal Blind
In India,
out of which
majority are Children.

6.8 million of these 15 million suffer from corneal blindness with vision less than 6/60 and of these about 1 million have bilateral corneal blindness.




If the present trend continues, it is expected that the number of corneally blind individuals in India will increase to 10.6 million by 2020.



Of these, 3million can be
benefitted by
keratoplasty.

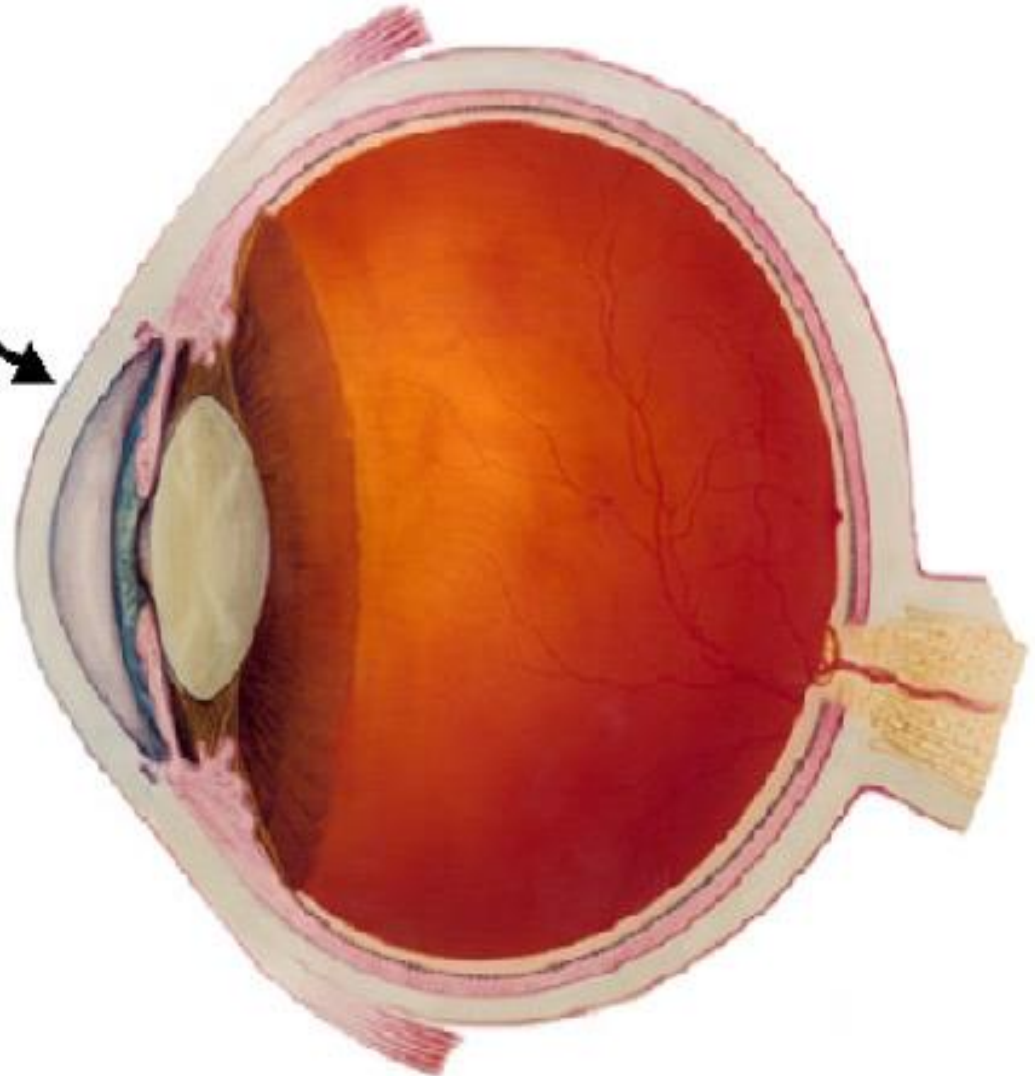
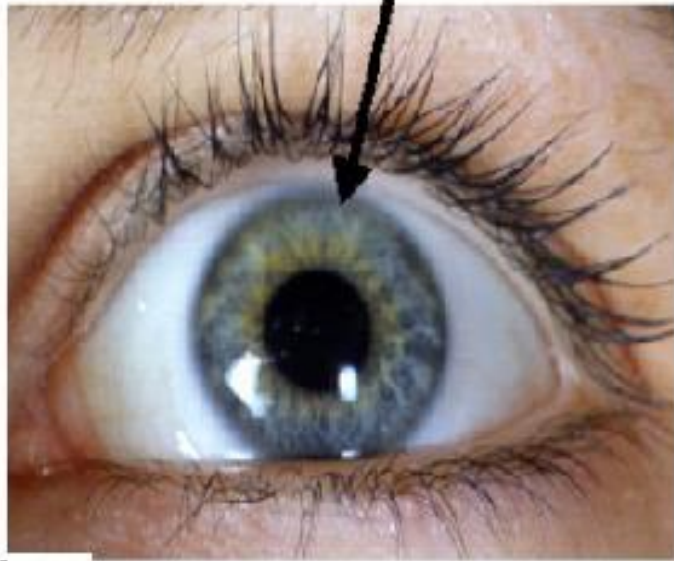


Top causes of visual
impairment: refractive
errors, cataracts and glaucoma



Top causes of
blindness: cataracts, glaucoma
and age-related macular
degeneration

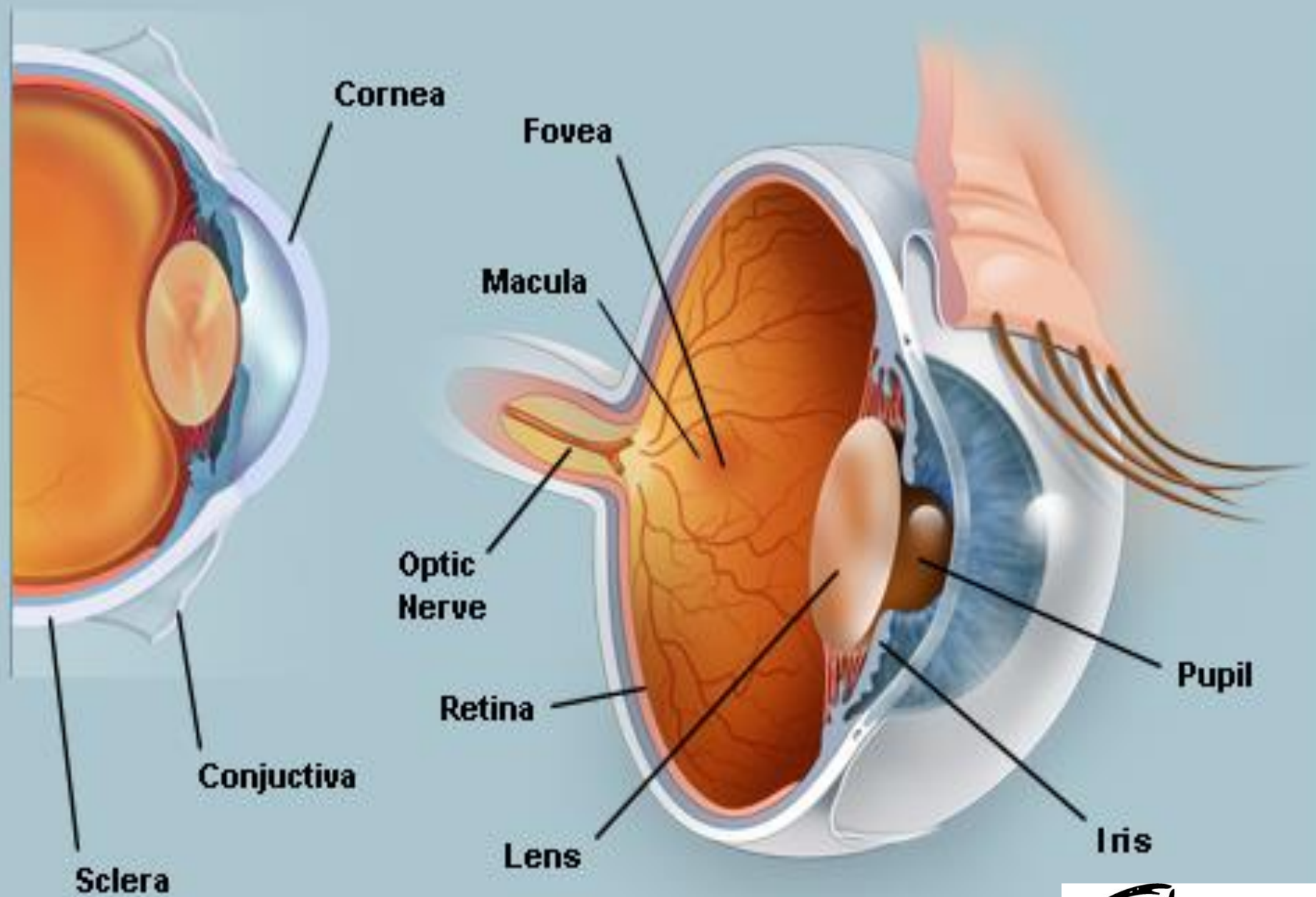
Cornea



Cappy



E.B.A.I.
Let Your Eyes Change Someone's Life



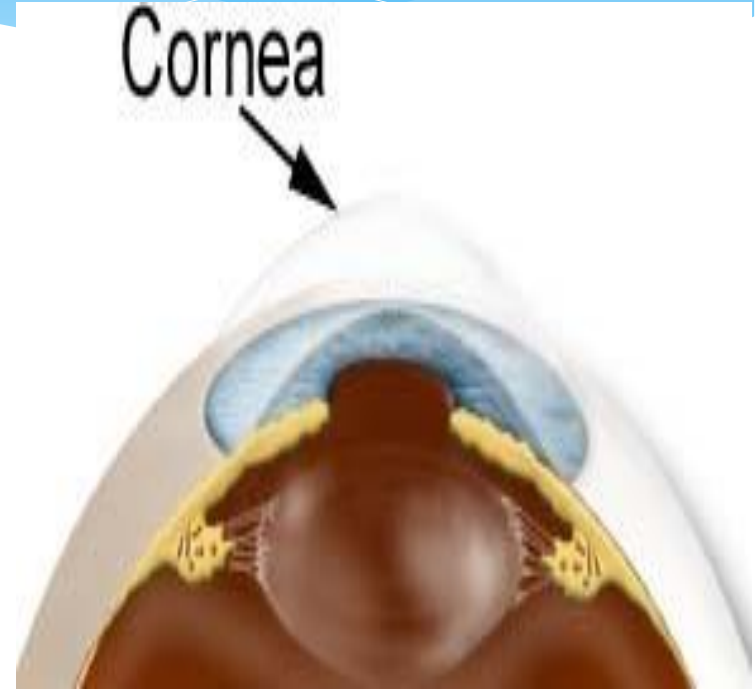
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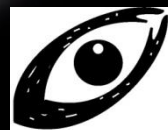
Let Your Eyes Change Someone's Life

Cornea is the transparent, dome-shaped window covering the front of the eye. It is a powerful refracting surface, providing 2 / 3 of the eye's focusing power. Like the crystal on a watch, it gives us a clear window to look through.

Because there are no blood vessels in the cornea, it is normally clear and has a shiny surface. The cornea is extremely sensitive - there are more nerve endings in the cornea than anywhere else in the body.

The adult cornea is only about 1/2 MM thick





E.B.A.I.

Let Your Eyes Change Someone's Life

CORNEAL TRANSPLANTATION ACT HUMAN ORGAN TRANSPLANTATION ACT

**THE TRANSPLANTATION OF HUMAN ORGANS ACT 1994
(11-7-1994)-
Central Act.**

Adopted by the State Government in 1996.

THE TRANSPLANTATION HUMAN ORGAN ACT, 1994

An act for regulation of
Removal, storage & transplantation of human organs for
therapeutic purposes
Prevention of commercial dealings in human organs

AUTHORITY FOR THE REMOVAL OF EYES

- * Removal to be done by a Doctor only
- * Eye balls can be collected only after death is certified.
- * Consent to be given by next of kin
- * Hospital must be registered to conduct Transplantation


Introduction

- * Eye banks are conceived to provide safe quality donor eyes for therapeutic use & research.
- * Eye Banks work as a Autonomous bodies
- * Eyebanks are either Govt. or NGO
- * Attached to a eye hospital or independent
- * Rules applied are of organ transplantation



1961- Ist Eye Bank in America

1964 - Ist Eye Bank in India



* In spite of the continued efforts of NPCB, only 250 Eye banks functional of the total 750 Eye banks established in India.

* Only 7 functional eyebanks in Delhi

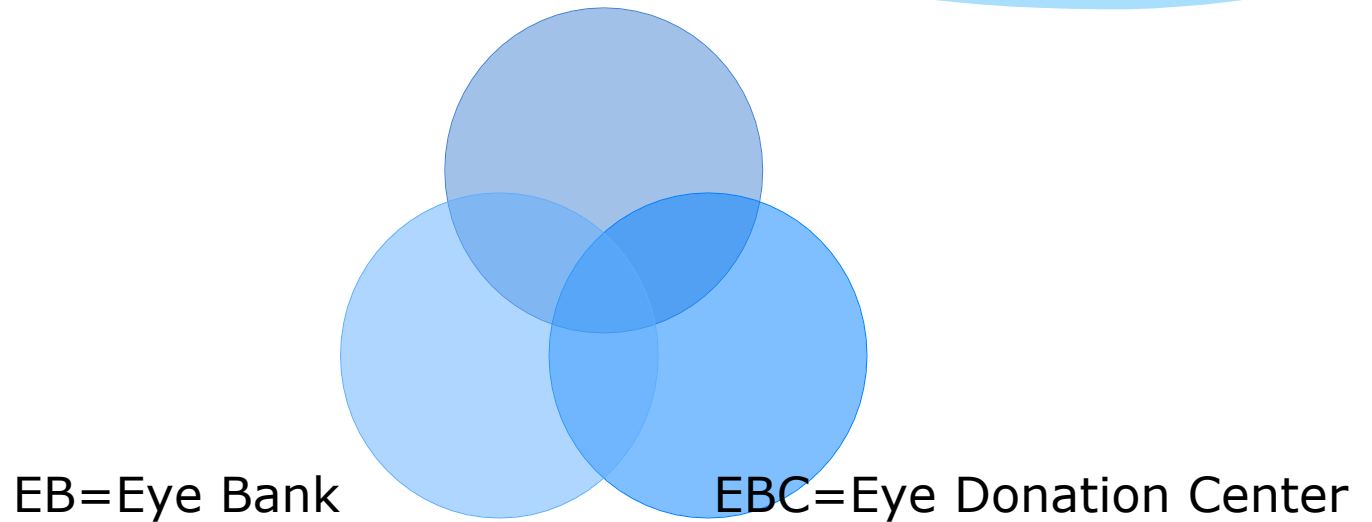
WHAT IS AN EYE BANK

- * Collection of Donor Eyes**
- * Evaluation of Corneas**
- * Distribution**
- * Educating the community**
- * Non-profit Organization**

EFFECTIVE EYE BANKING

1Eye Bank =20 million pop.
1Eye Bank=40 Eye donation Center

EBTC=Eyebank& Training Center



EYE BANKS(EB) Vs EYE DONATION CENTER(EDC)

* EB

- * Independent Layout
 - * Serology Equipment
 - * Slitlamp biomicroscopy
 - * Specular microscopy
 - * Autoclaving unit
 - * Lab. Refrigerator
 - * Laminar Air flow hood
 - * Complete staffing
 - * Van & driver
- MD, Manager, Technical staff, ED counselor, Secretary

* EDC

- * Trained doctor for eye collection.
- * Enucleation set
- * Attached to a hospital for autoclaving facility

V.M.M.C & SAFDARJUNG HOSPITAL

- * TOTAL MORTALITY REPORTED PER DAY : AVERAGE 20-25
- * TOTAL MORTALITY IN 2015 : 6894 TILL DEC 1
- * TOTAL INCIDENCES OF RTA MORTALITY PER DAY : 5-8
- * TOTAL NUMBER OF SUCCESSFUL KERATOPLASTIES : 62 (2014)

STRATEGIES FOR INCREASE EYE COLLECTION

- * Mass Publicity-Tv,Print,Electronic,Lectures
- * Voluntary Eye donatation-Older age
- * Grief Counseling
- * HCRP(hospital cornea retrival program)
Young corneas,more utilization,immediately after death

RETRIVAL OF EYES

- * Either enucleation or in-situ corneal excision
- * Eye collection within 6-8hrs
- * Preliminary procedure check donor medical records. check for contraindications
- * Strict aseptic precautions to be taken
- * Collect blood(10ml) from the Jugular vein or subclavian vein or heart.
- * Transport media used is Thermocole box with Ice Pack . moist chamber or MK media. Temp at + 4deg C

ABSOLUTE CONTRAINDICATIONS FOR EYE DONATION

- * AIDS
- * Leukemia
- * Hepatitis - A,B,C
- * Rabies
- * Encephalitis
- * Creutzfeldt-Jacob Disease
- * Septicemia
- * Unknown cause of death

WORK AT EYE BANK ON RECEIVING DONOR EYE



Donor Eye Evaluation

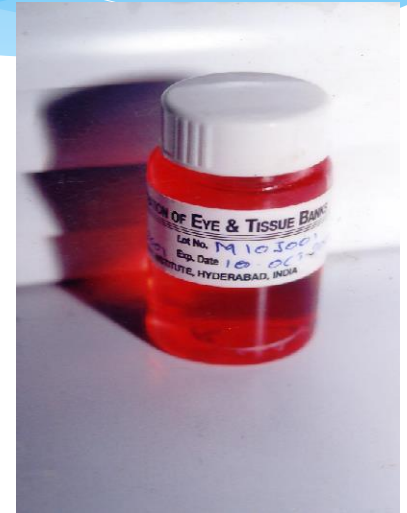
Slit lamp Bio-microscopy Examination

Specular Microscopy

Serology Test (Blood Test)

Fit for use

Used for Research



Moist chamber	48hrs	Whole globe	Glass bottle with moist cotton
McCarey-Kauffman Medium(MK Medium)	72 hours	Corneal scleral button	Dextran & antibiotics
Optisol Optisol GS	15 days	Corneal scleral button	
Tissue media	2-3wks	Corneal scleral button	Dextran,chondrotins ulphate,electrolytes ,antibiotics,Essential aminoacids,insulin,e pidermal growth factors,antiprotease s,anticollagenase
Organ culture	35days	Corneal scleral button 34 deg C 2-3days in special organ culture media at 34deg C in co2 5% water jacketed incubator	NO DEXTRAN & ANTIBOTICS.CLOS ED MEDIA 2days later 130ml of media at 34 degC

Cryopreservation

- * 1964
- * 18months
- * Tissue stored in Liquid nitrogen at -197°C
- * At the time of thawing the cial containing cornea is placed in water bath at temp of 60°C at 1min.
- * Trained techiques for Freezing & thawing

EXCELLENT CORNEA(A)

Crystal clear cornea ,no epithelial defect, Clear granular stroma &/or light arcus,no striae,no endothelial defect

VERY GOOD(B)

Slight epithelial haze &/or defect (central & or/Peripheral),clear stroma ,&/or slight arcus,Few Shallow folds(striae),No guttata

GOOD ©

Obvious epithelial defects &/or light to moderate corneal cloudiness &/or Moderate arcus<2.5mm,Obvious shallow striae, few guttata

FAIR

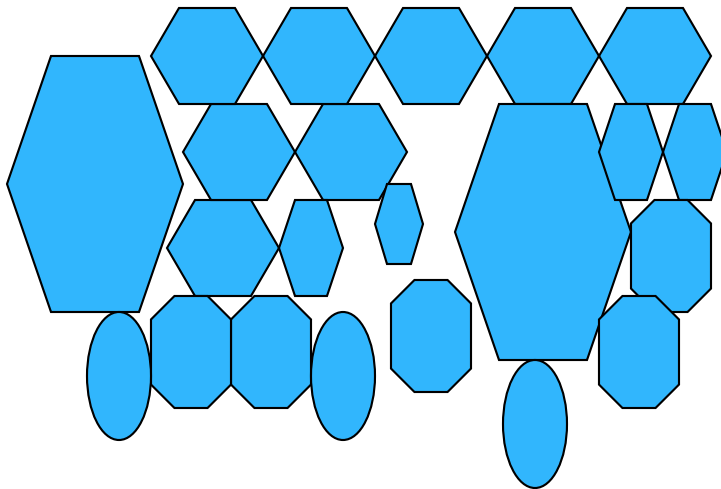
Obvious epithelial defects &/or heavy stromal cloudiness &/or heavy numerous deep folds (striae) & /or heavy arcus senilis>2.5mm,moderate guttate

NOT SUITABLE FOR SURGERY

Cornea with heavy cloudiness or opacities & /or marked striae &/or marked guttata&/or technical problems in removal&/or/unable to collect donor blood for serology /poor maintenance of cold chain/donor disease

SPECULAR MICROSCOPY

- * Number of Endothelial cells
 - * Polymegathism-variation in size
 - * Pleomorphism-variation in shape
- Index of endothelial function



ENDOTHELIUM COUNT IN DONOR EYE

- * 3000cell/mm²- Excellent
- * 2500-3000cell/mm² -Vgood
- * 2000-2500cell/mm²-Good
- * 1500-2000cell/mm²-Fair
- * <1500/mm-Not suitable for Optical surgery
- * USE IF MORE THEM 2000CELLS/MM²
- *

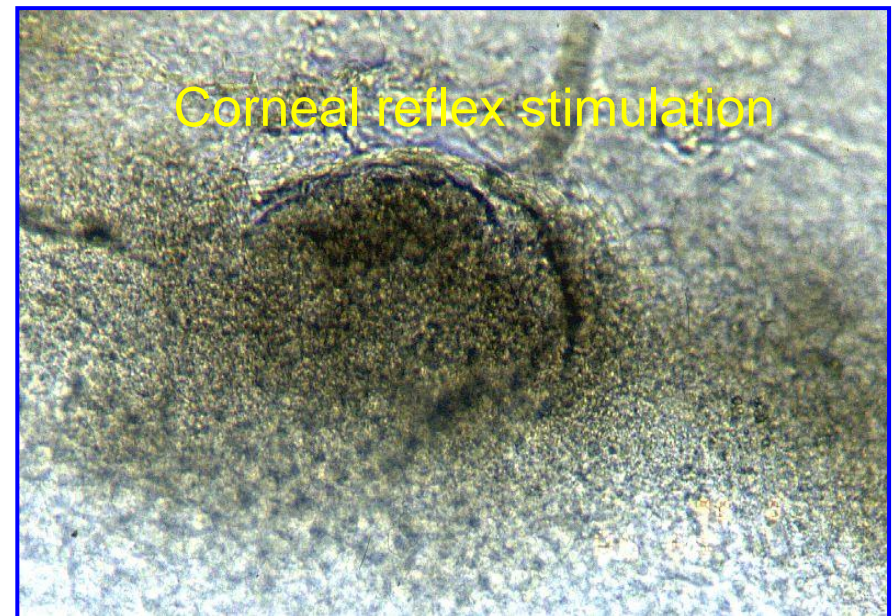
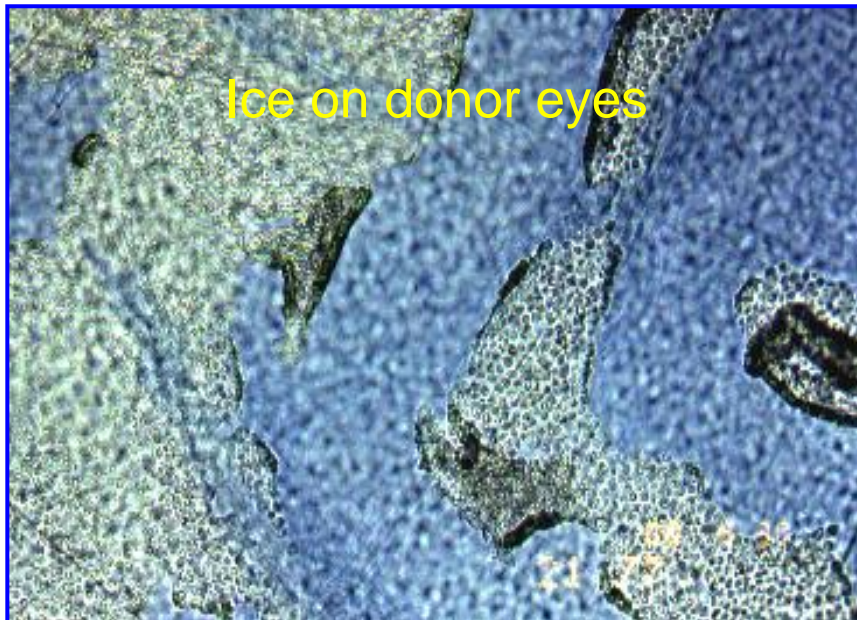
EYE BANK STANDARDS

- * Maintenance & calibration of instruments (fridge, Laminar airflow, specular microscope)
- * Sterility check-Taking cultures in EB
- * Waste disposal
Yellow-Tissue waste,
Red-gloves, disposable, syringes, swabs, saline
Black-Paper, stationary
- * Infection safety control
Follow EBAI medical standards manual

Corneal recovery

Donor maintenance:

- Closed eyes, humidification (no ice / ointments / gauges)
- Short *post mortem* interval
- Corneal reflex stimulation: gauge, sterile physiologic
- Low ambient remperature



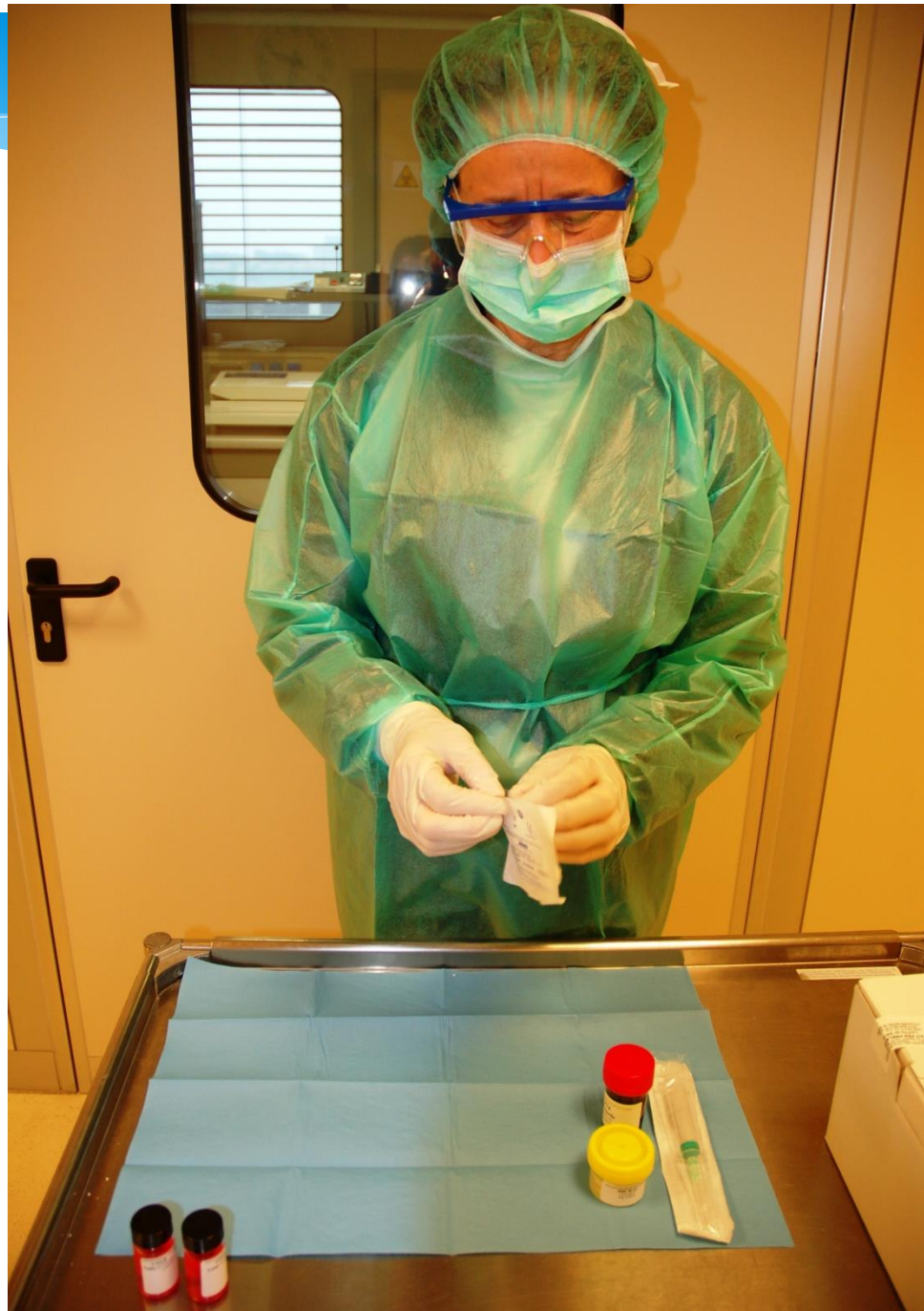
Corneal recovery

- Consent, ascertainment of death, identification
- Physical and *in situ* inspection
- Disinfection of peri-ocular tissues, sterile field preparation
- Disinfection and rinsing of ocular tissues
- Excision/enucleation
- Reconstruction
- Medical-legal requirements



Dressing

- Personal Protective Equipment
- Surgical scrub
- Always work on a clean and tidy work surface



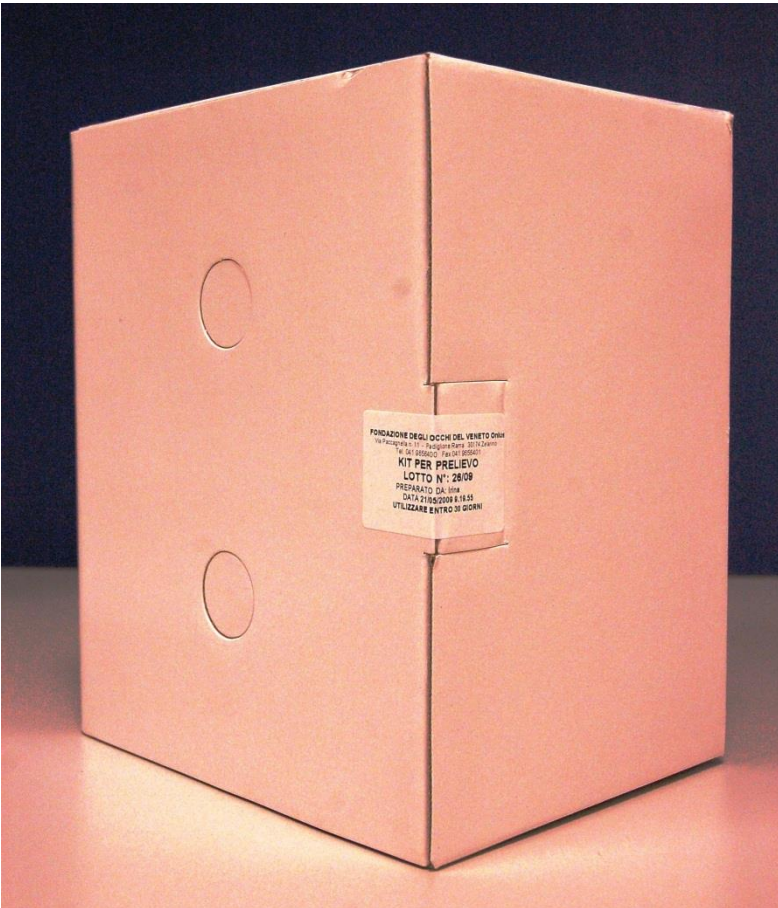
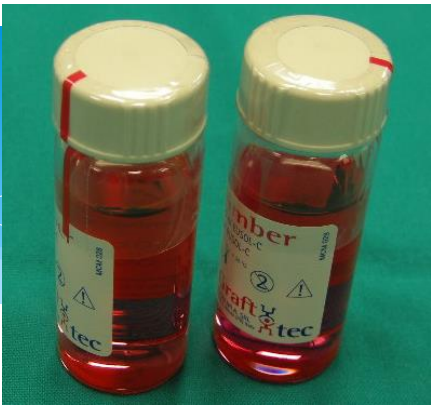
Physical inspection of the donor (checking for evidence of parenteral drug use, and other high-risk behaviors for AIDS and hepatitis)

- Put on personal protective clothing
- A visual head-to-toe inspection of each eye donor should be performed, including the webs of fingers and toes, as well as the groin and behind the knees
- Look for:
 - ✓ bruises
 - ✓ lacerations, scars, piercing
 - ✓ needle tracks not compatible with recent pathological anamnesis
 - ✓ fresh tattoos that may hide parenteral drug use, and other high-risk behaviors
 - ✓ and signs of transmissible diseases such as Kaposi sarcoma, swollen lymph nodes, skin rashes

Procurement: **recovery cases**

- 100% disposable material

- 100% disposable material
- 100% traceability

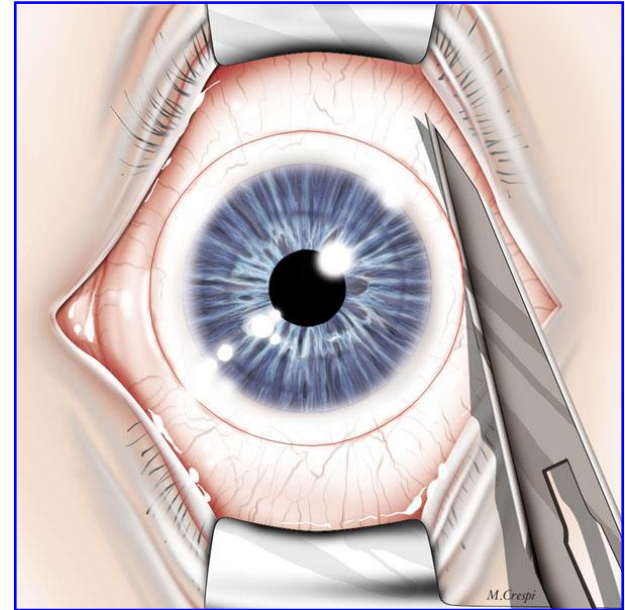
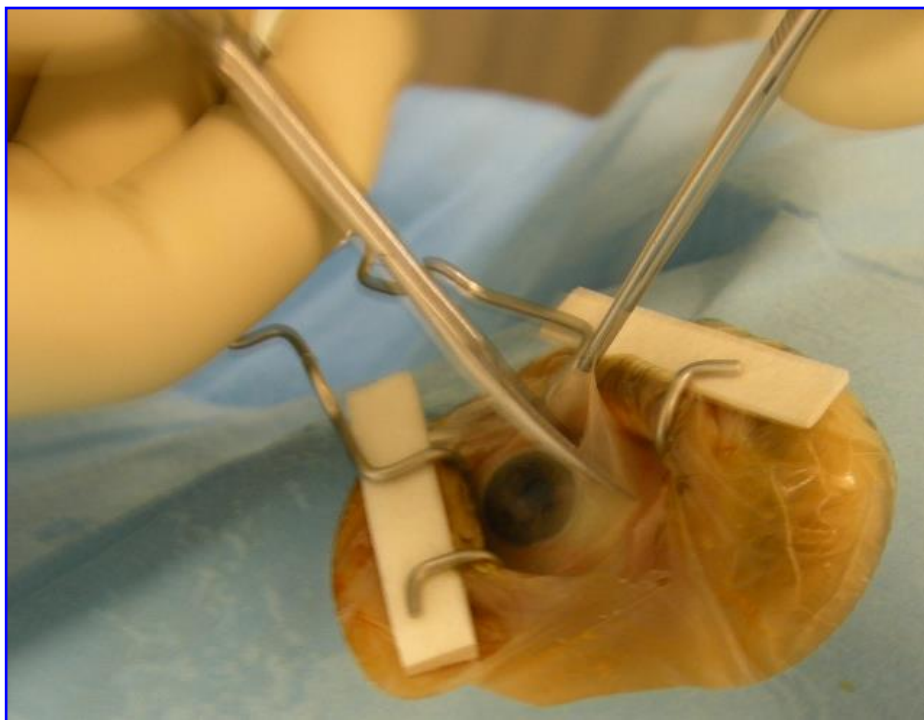


Disinfection, rinsing, draping





Peritomy, sclerotomy



Sclerotomy and recovery: instruments different from those for conjunctiva

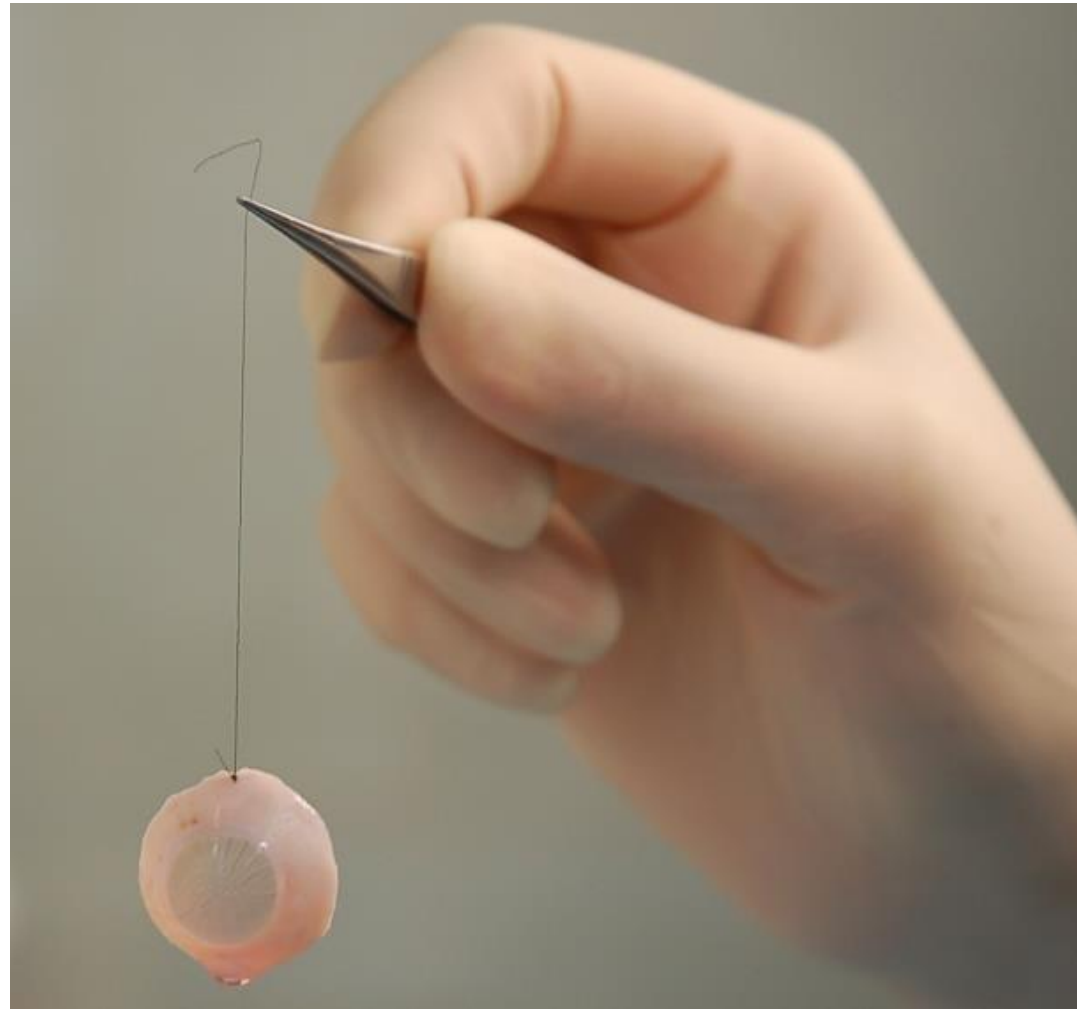
NO!



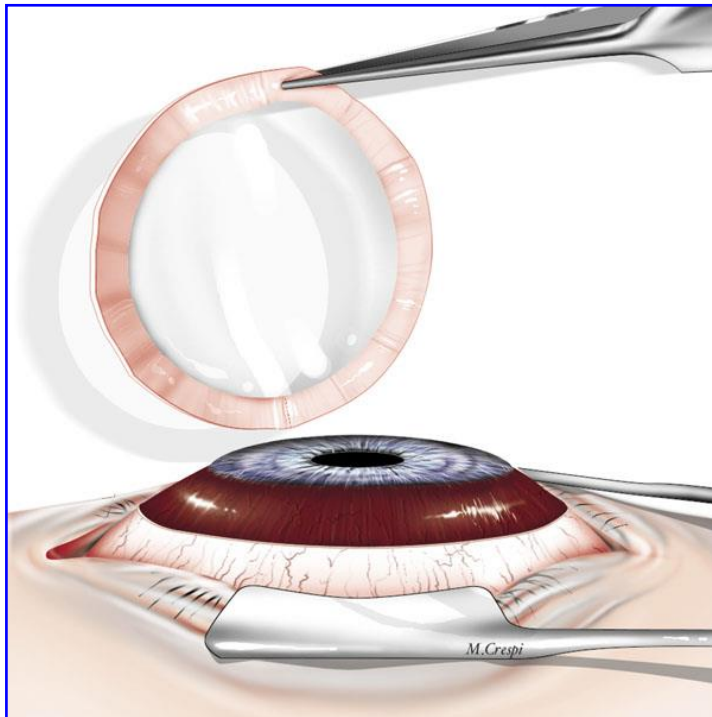
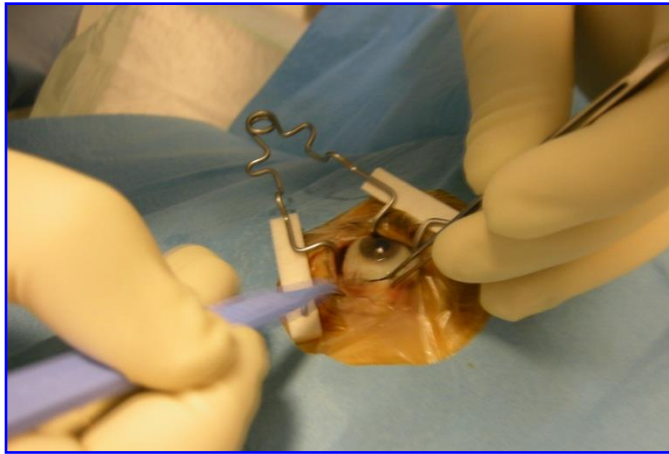
Sclerotomy

- Scleral rim ~ 4 mm
- Regular cutting

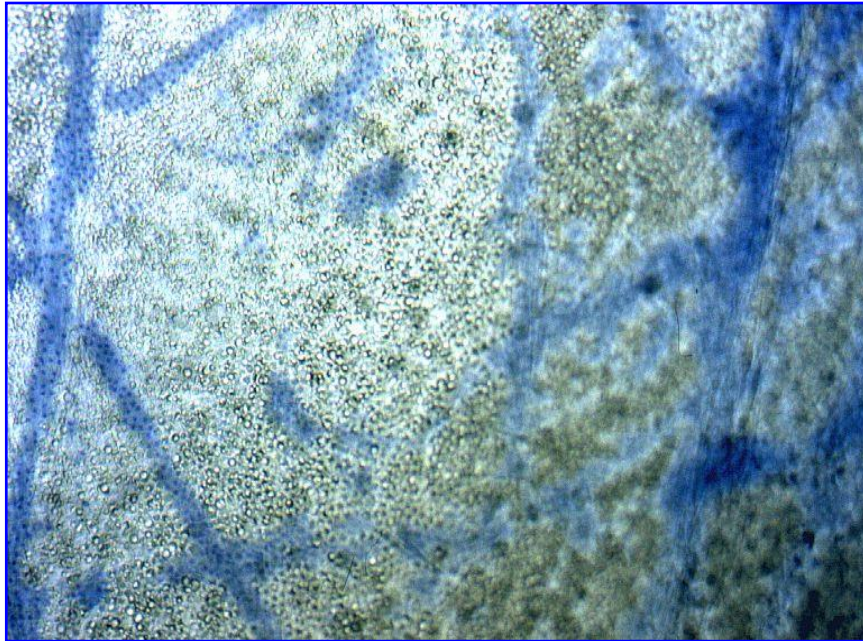
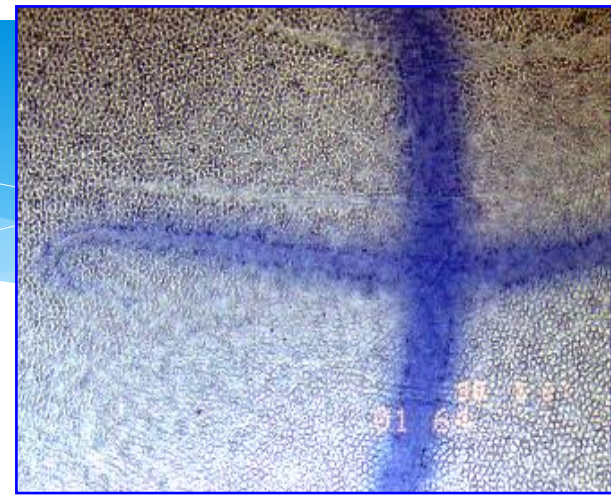
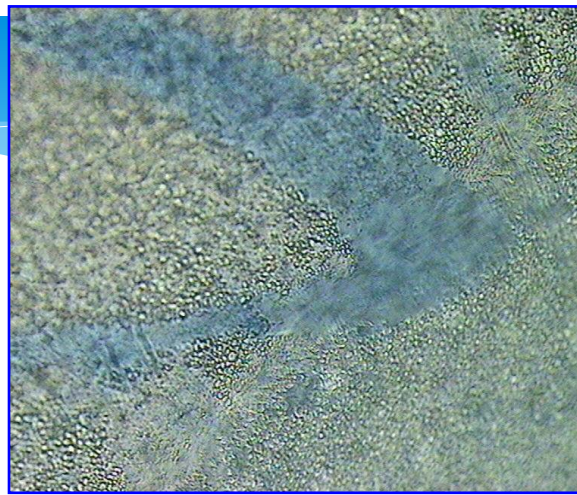
NO!



Corneal-scleral rim detachment (most frequently associated to technical errors)



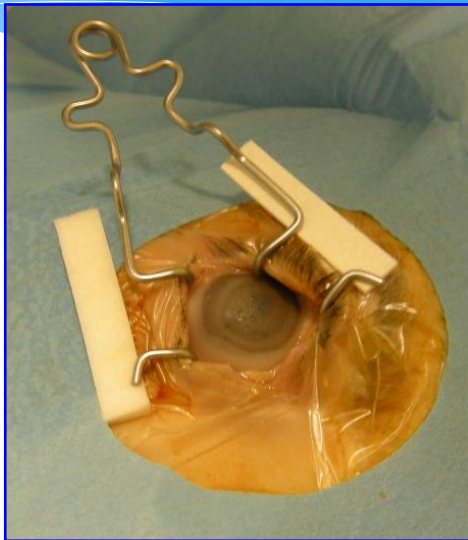
NO!



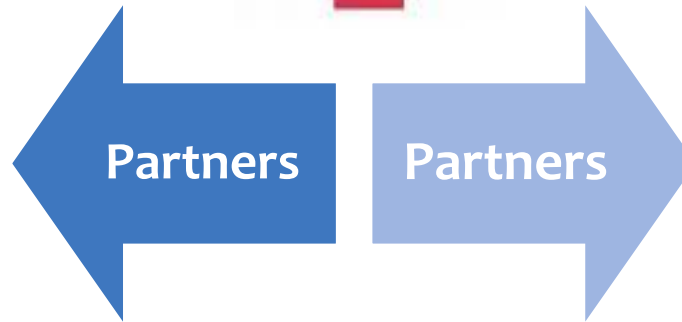
- No instruments in the AC
- No tension, distortion



Reconstruction



Collaborations for Management systems



V I S I O N



THE RIGHT TO SIGHT

What is VISION 2020?

**A Global Initiative to Eliminate
Avoidable Blindness**



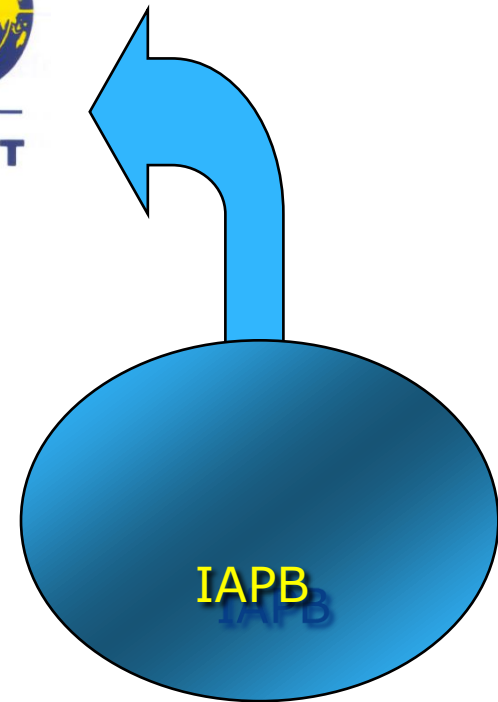
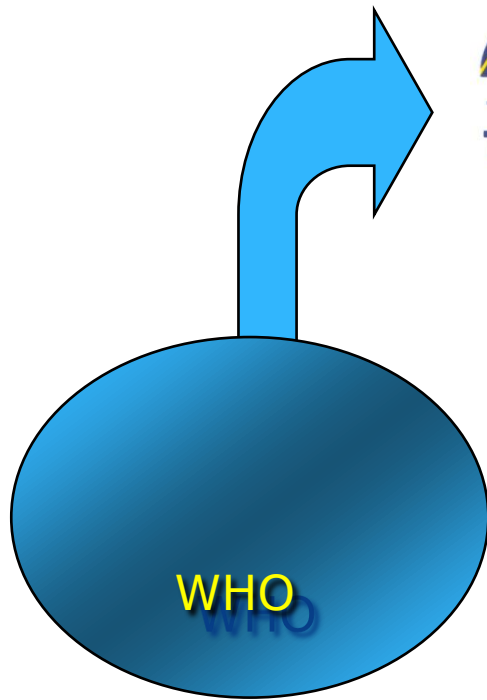
AIM:

“To intensify and accelerate present prevention of blindness activities so as to achieve the goal of eliminating avoidable blindness by the year 2020”



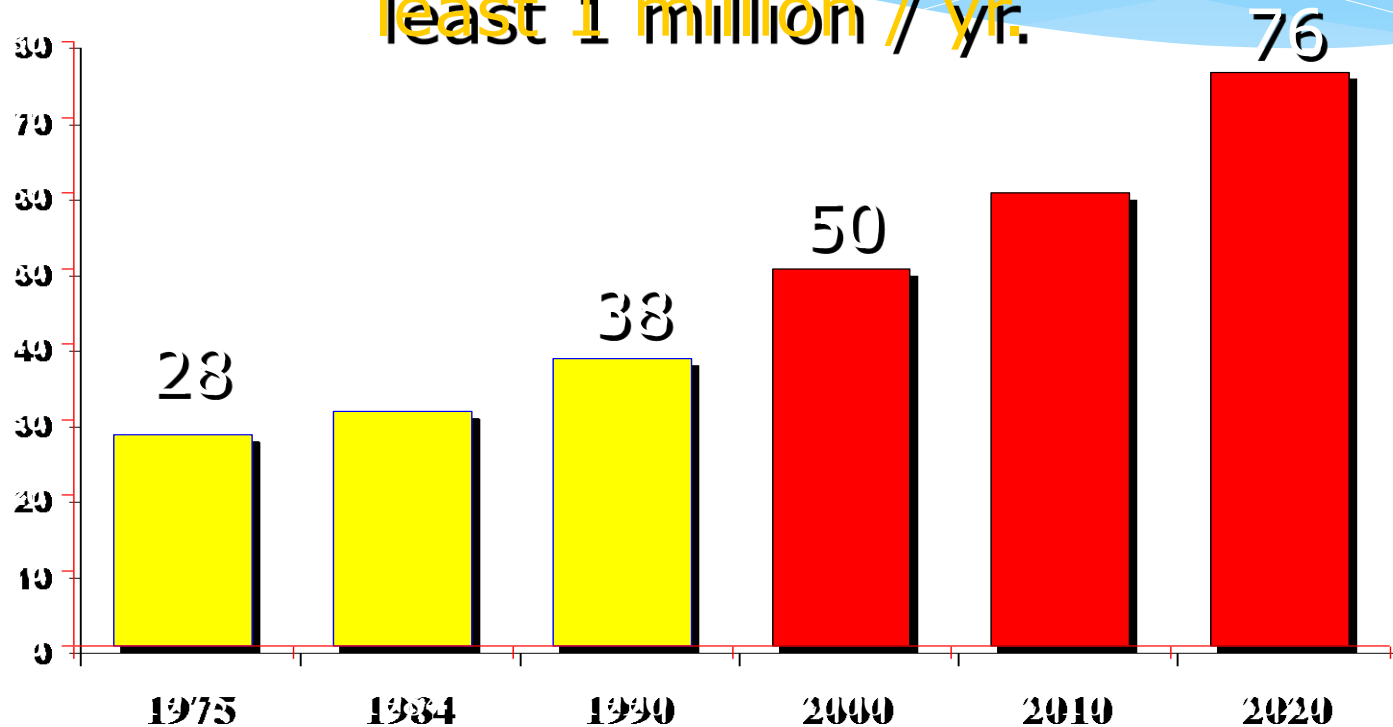
**VISION 2020: The Right to
Sight
is about
PARTNERSHIP**

VISION
2020
THE RIGHT TO SIGHT



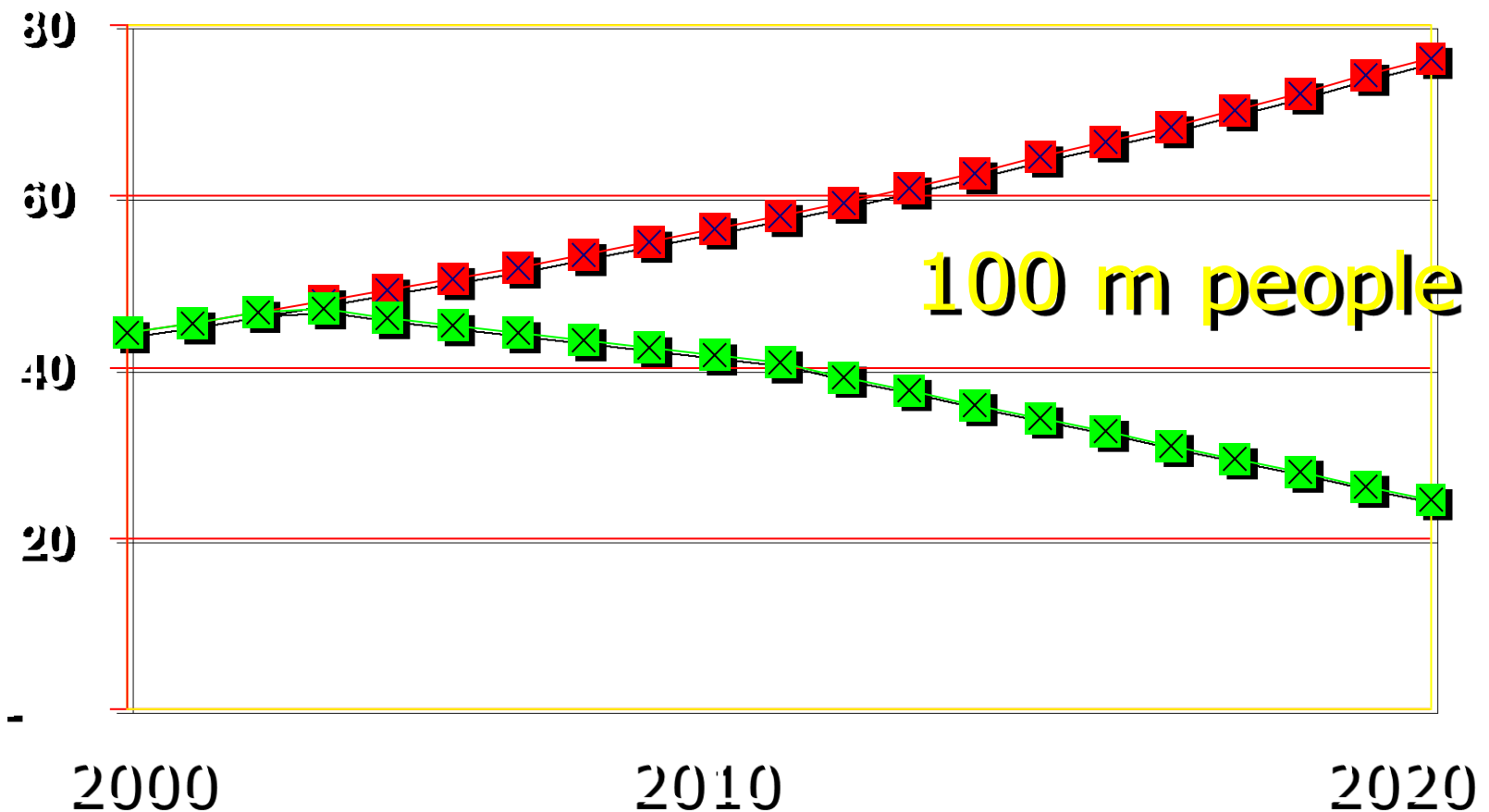
Global Blindness Projections

The number of blind people was increasing by at least 1 million / yr.

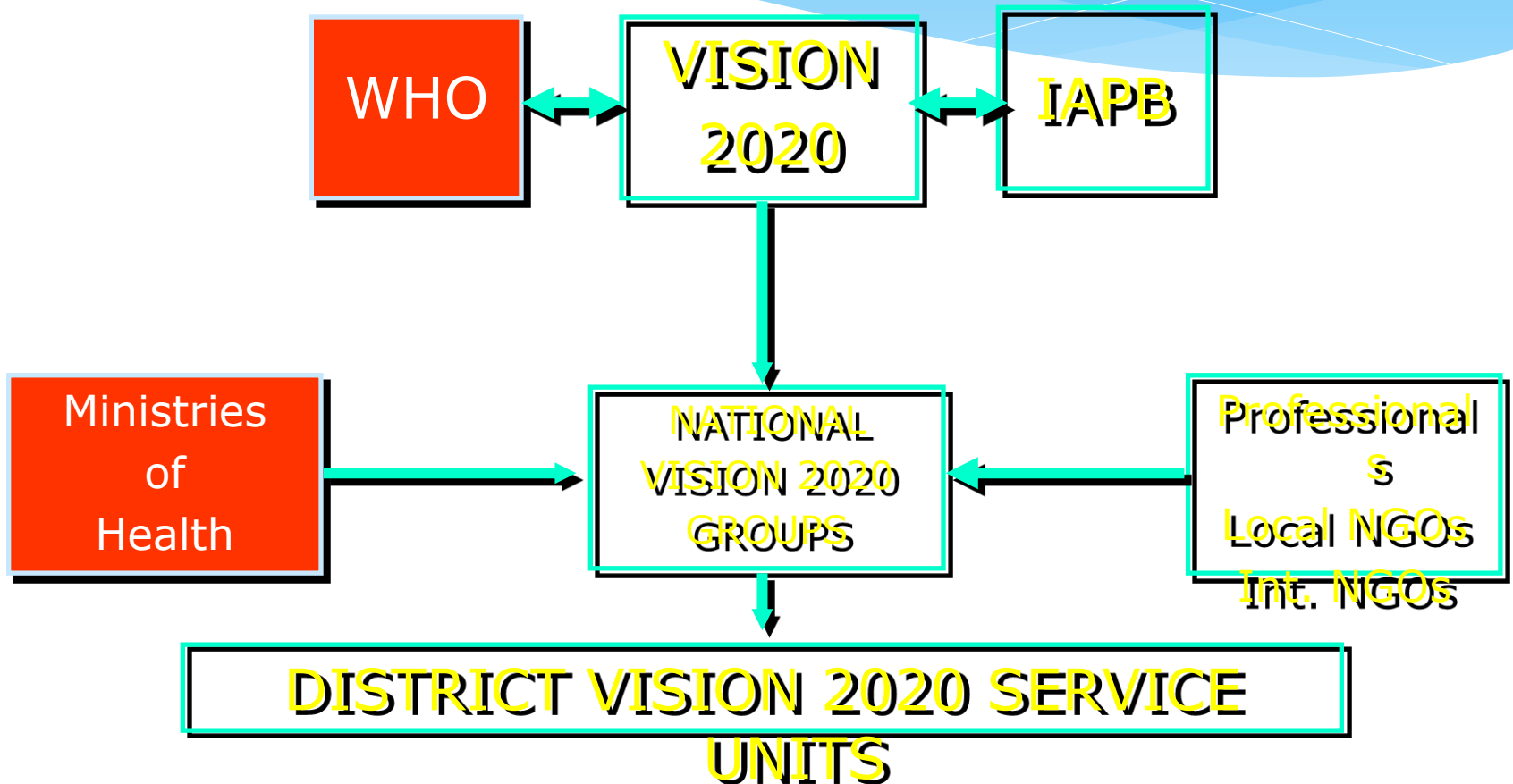


Increasing population Increasing proportion of people aged 50 years +

Blindness Projections: With and Without Global Initiative

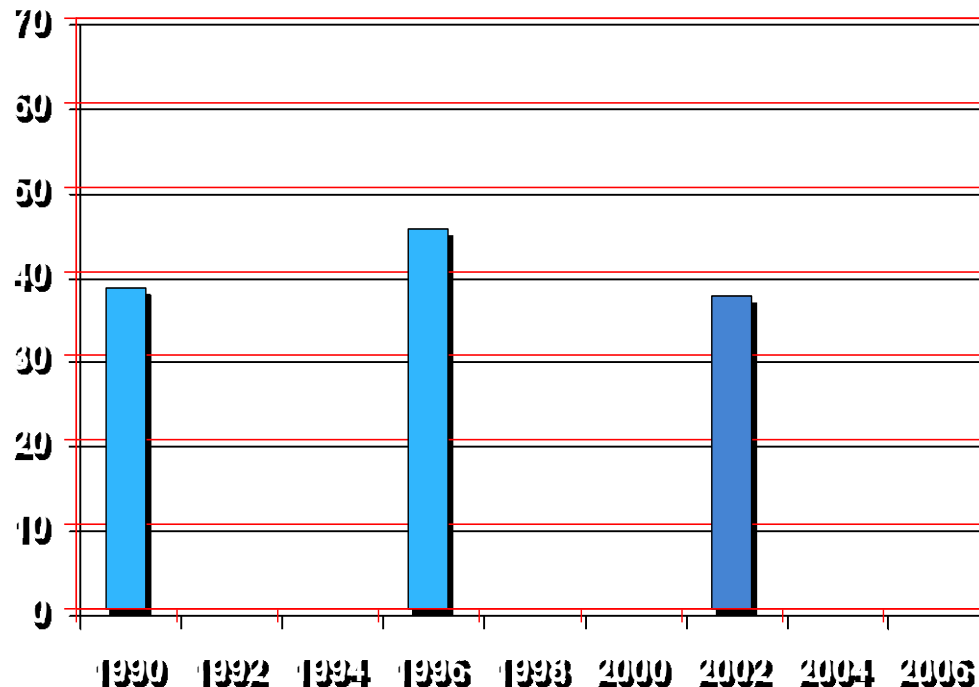


International Structure of VISION 2020



Global Burden of Blindness and visual impairment

- Update in 2004, based on 2002 population
- Based on 55 new surveys



37 Mo Blind
124 Mo Low
Vision

161 Mo V.
Impaired

Reaching out to REAL Indian population

