

# Infection Prevention strategies

## Endophthalmitis post Cataract (Cat) Surgery

### Overview:

- RVEEH Infection Prevention Program
- RVEEH Cataract Surgery – Aseptic/Infection Prevention Practices
- RVEEH Endophthalmitis Diagnosis
- RVEEH nos./rate of Post Cat/IOL Endophthalmitis 1997 to 2007 & related issues
- RVEEH and Other Service Providers Post Cat/IOL Endophthalmitis cases 1997 – 2007
- ESCRS study

# RVEEH Infection Prevention Program

- **Hand Hygiene Program/Audits**
- **Cleaning – A schedule for internal audits.**
  - Usually the audits are carried out by the cleaning contractor and an RVEEH staff.
  - Very high risk areas such as theatres and SPS are audited monthly.
  - 6 monthly audit is conducted by an external auditor
- **All used instruments are cleaned and sterilised in SPS**
  - Doctors' Own instruments

# RVEEH Infection Prevention Program

- **Testing of Theatre air-conditioning**
  - Testing integrity of Filters
  - Smoke testing
  - Air sampling
- **Infection Control handout for Surgical Patients**
- **Surveillance: RVEEH collects data**
  - Endophthalmitis post surgery at RVEEH
  - Endophthalmitis post surgery at Other Hospital
  - Community Endophthalmitis

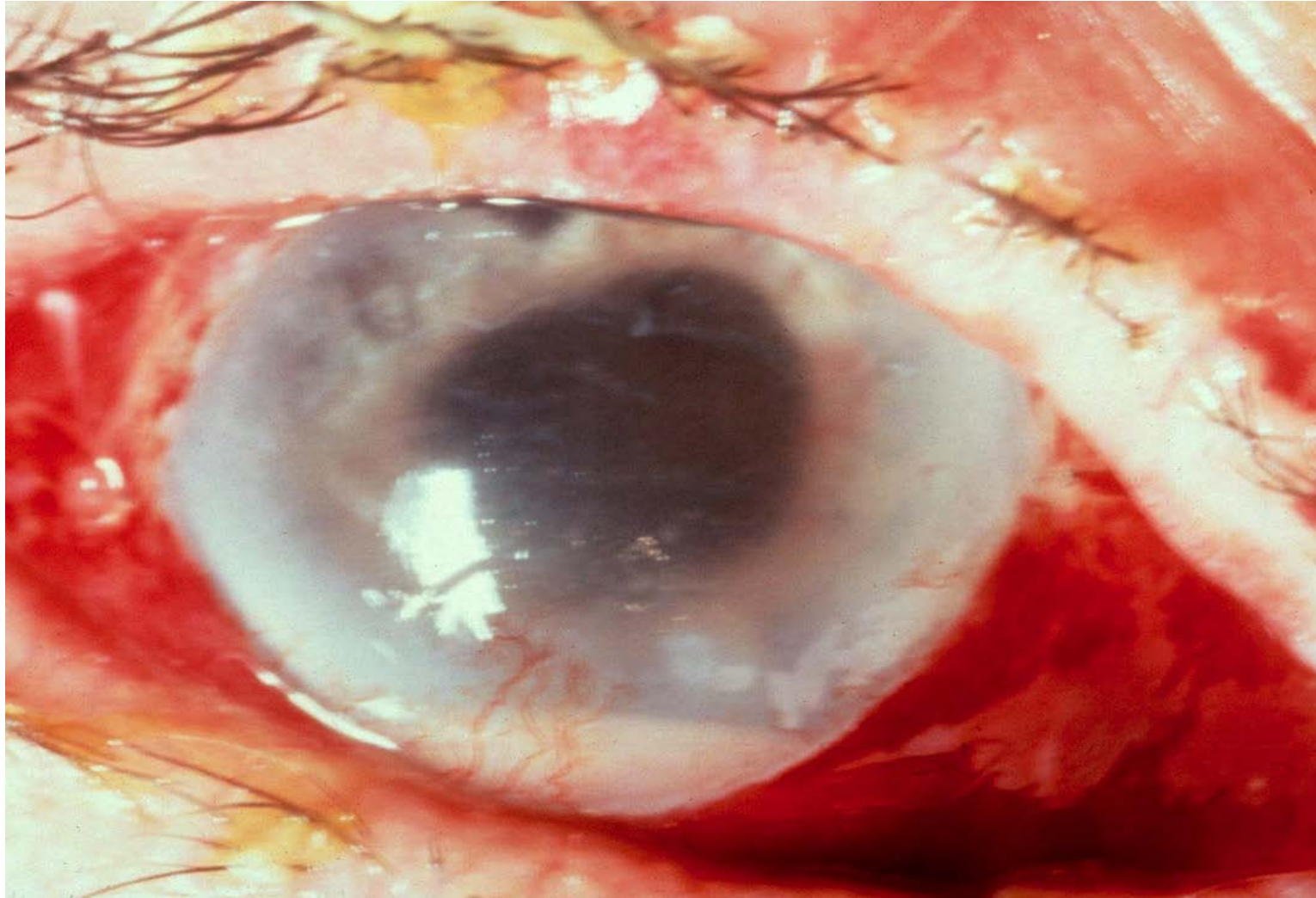
# Cataract surgery at RVEEH – general practice (the norm)

- Full sterile & aseptic techniques
- Prior to surgery – prep site with betadine
- At the end of surgery – s/c keflin +/- dexamethasone then apply chlorsig & pad & shield  
This year intracameral cephazolin started
- Prescribe topical chlorsig and Prednefrin Forte
- Follow up post-op:
  - At day 1, 1 week & 4 weeks

# Endophthalmitis

An inflammation of the internal coats of the eye. It is a dreaded complication of all intraocular surgeries, particularly **cataract surgery**, with possible loss of vision and the eye itself. Other causes include penetrating trauma and retained intraocular foreign bodies.

# Severe endophthalmitis



Media file 1: Image courtesy of Joan W. Miller, MD, and Mehran Afshari, MD, Massachusetts Eye and Ear Infirmary, Boston, Mass.

# Endophthalmitis - Diagnosis

## **Clinical signs and symptoms:**

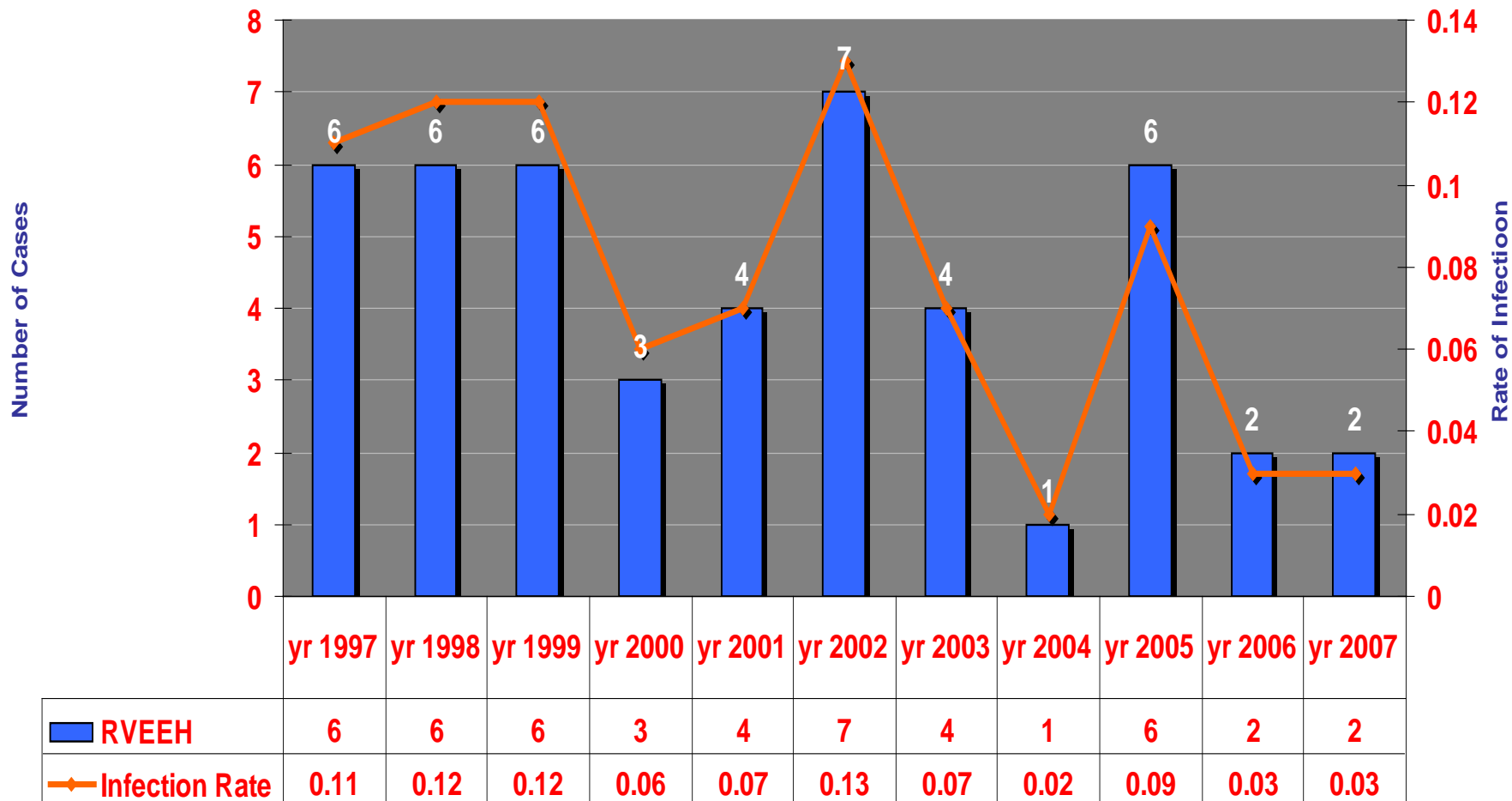
- Pain
- Chemosis
- Reduced light sense
- Uveitic reaction ranging from cells in AC on slit lamp examination to frank hypopyon
- Difficulty seeing fundus detail on ophthalmoscopy

# Endophthalmitis

## Laboratory findings:

- Polymorphs, with or without organisms seen on microscopy of aqueous and/or vitreous humour (lymphocytes don't count).
- Growth of organisms on culture is the ultimate confirmation
- Don't grow in culture
  - too small a sample or
  - the organisms seen on microscopy have been weakened by the eye's defence mechanisms or by antibiotic (drops)

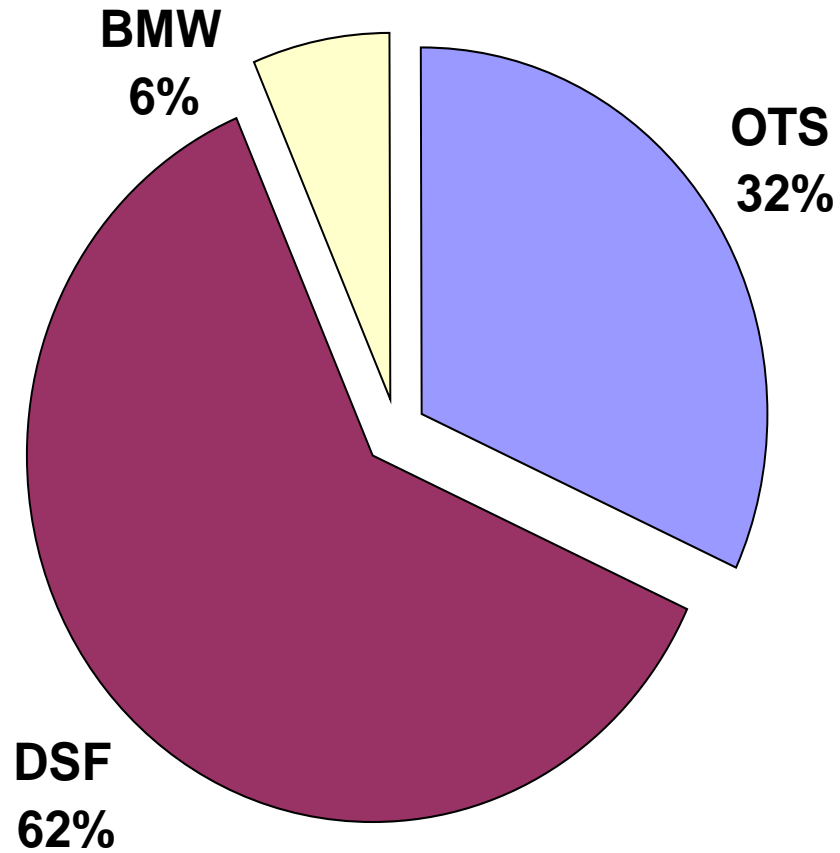
## Number of Endophthalmitis Cases & Infection Rate RVEEH 1997 -2007



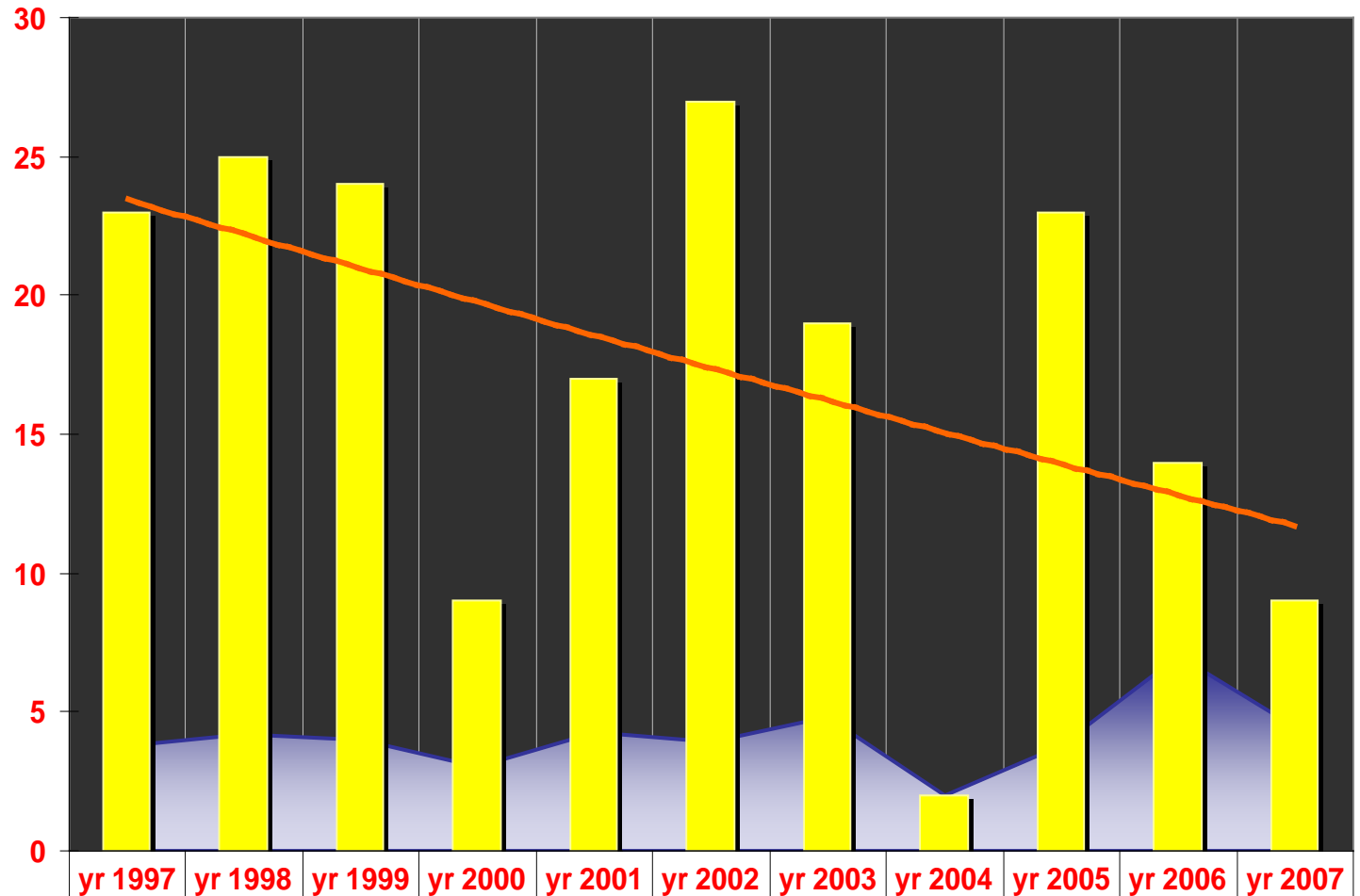
Total number of cases cultured positive = 27 out of 47 cases of RVEEH endophthalmitis

- Staph epidermidis (9)
- Strep oralis (3)
- Coag-neg staph (5)
- Haemolytic strep (1)
- Corynebacterium & micrococcus (1)
- Staph aureus & propionibacter (1)
- Staph aureus (2)
- Staph aureus & coag-neg staph (1)
- GPC resembling strep (1)
- Strep gordonii (1)
- Moraxella (1)
- Citrobacter koseri (1)

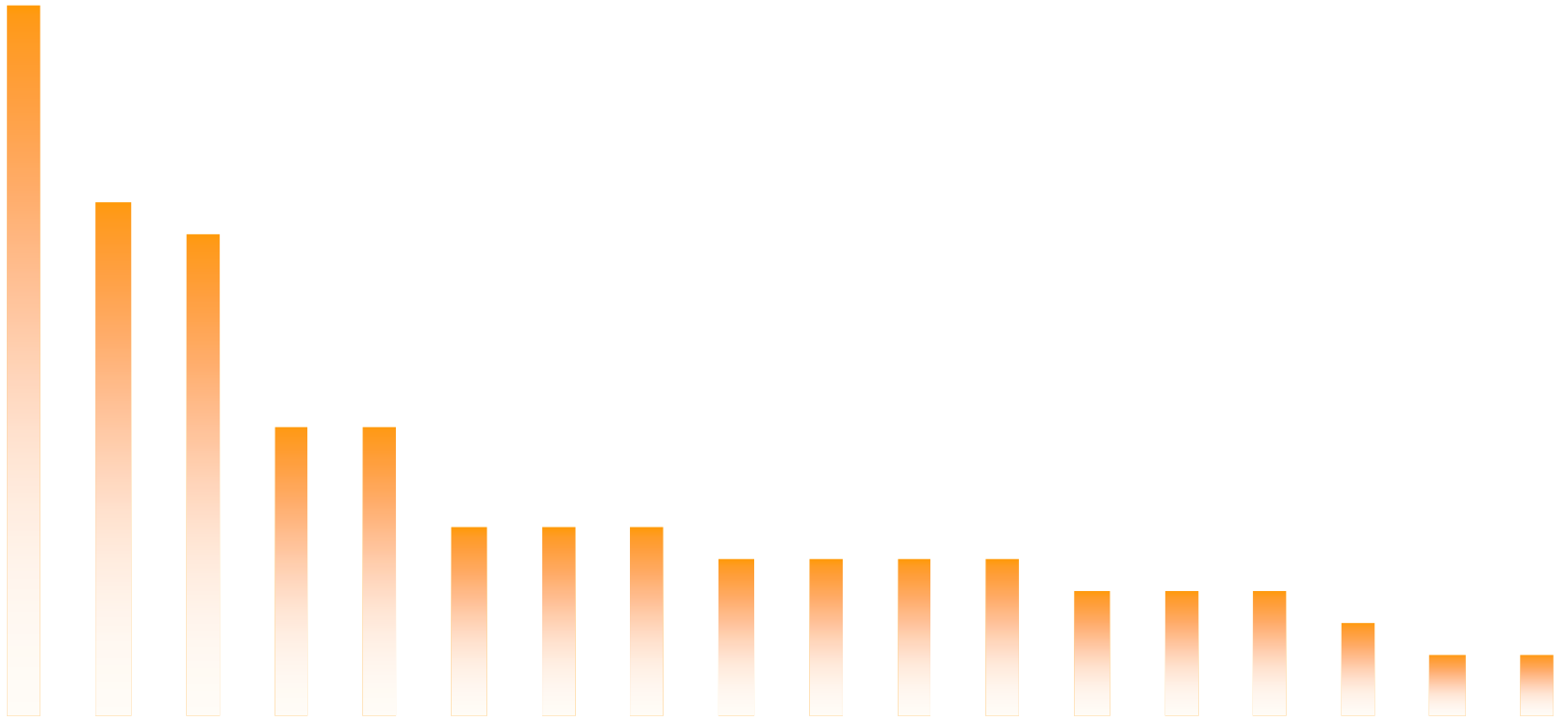
## Areas Where Surgery Performed



## Endophthalmitis Admission LOS 1997 - 2007



■ Average LOS	3.8	4.2	4	3	4.3	3.9	4.8	2	3.8	7	4.5
■ Total NO. of bed days	23	25	24	9	17	27	19	2	23	14	9



## Factors that may have contributed to post-op infection

- Not compliant with eye drops
- Flash sterilisation of instruments
- Not prepping the site properly
- Touched eye straight after s/c keflin (infection 1 day post)
- Failed to attend P1 & P2 follow up. Has been using initial prescribed eye drops 2 to 3 weeks and then prn (a total period of 7 weeks)

## Factors that may have contributed to post-op infection

- During surgery, microscope lead became detached from the ceiling, dangling and flapping within the sterile/ surgical field
- Rubbing eyes post surgery
- Pt on timoptol, same drops used pre & post surgery. Pt suffers from blepharitis ++

# Treatment for Endophthalmitis

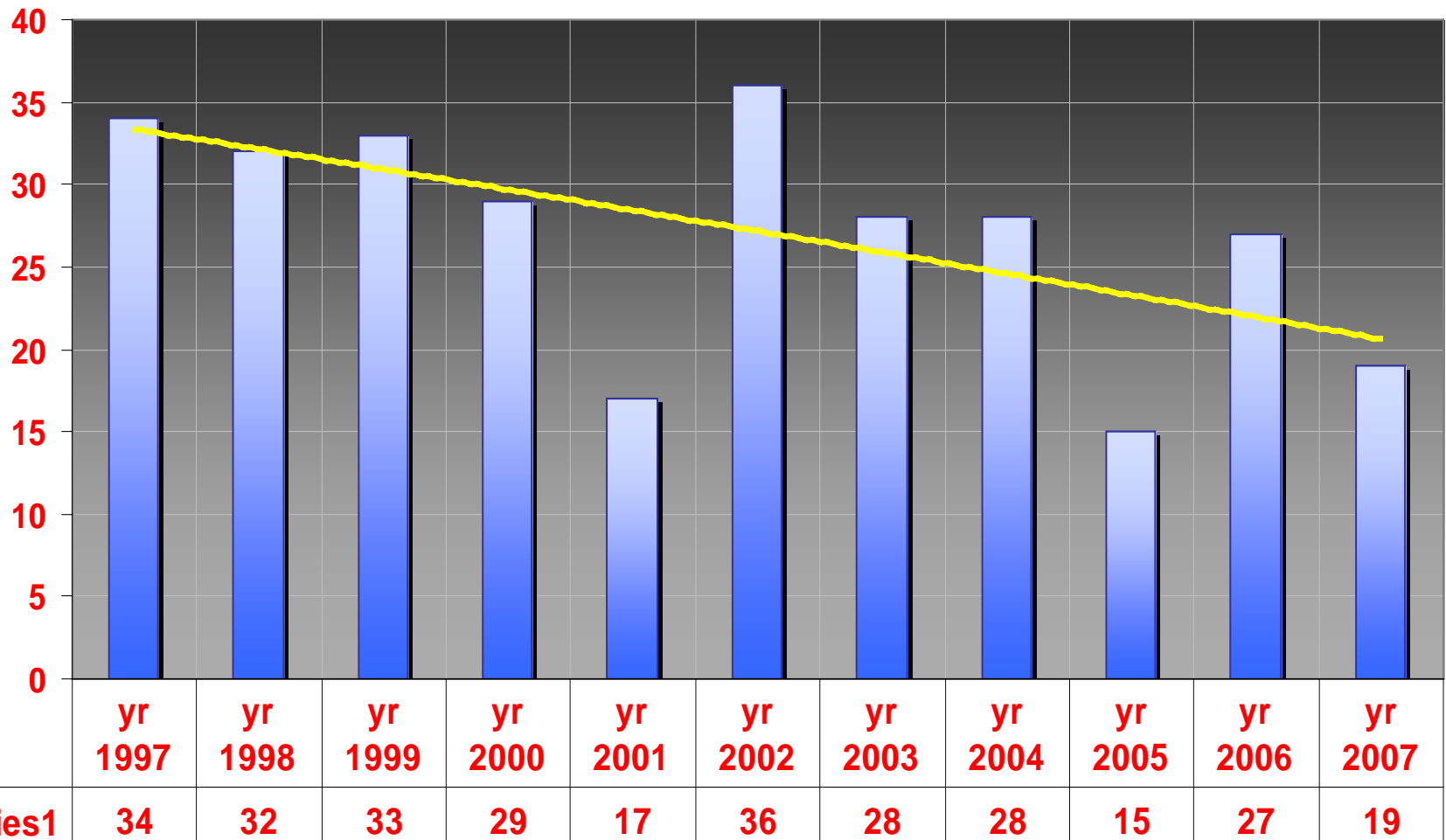
- Intravitreal Vancomycin, Ceftazidime & Dexamethasone
- Other additional treatment include intensive Prednefrin Forte , topical chlorsig  
sub-conj vanco/ceftazidime/dexa

## Estimated cost to treat a patient with Endophthalmitis

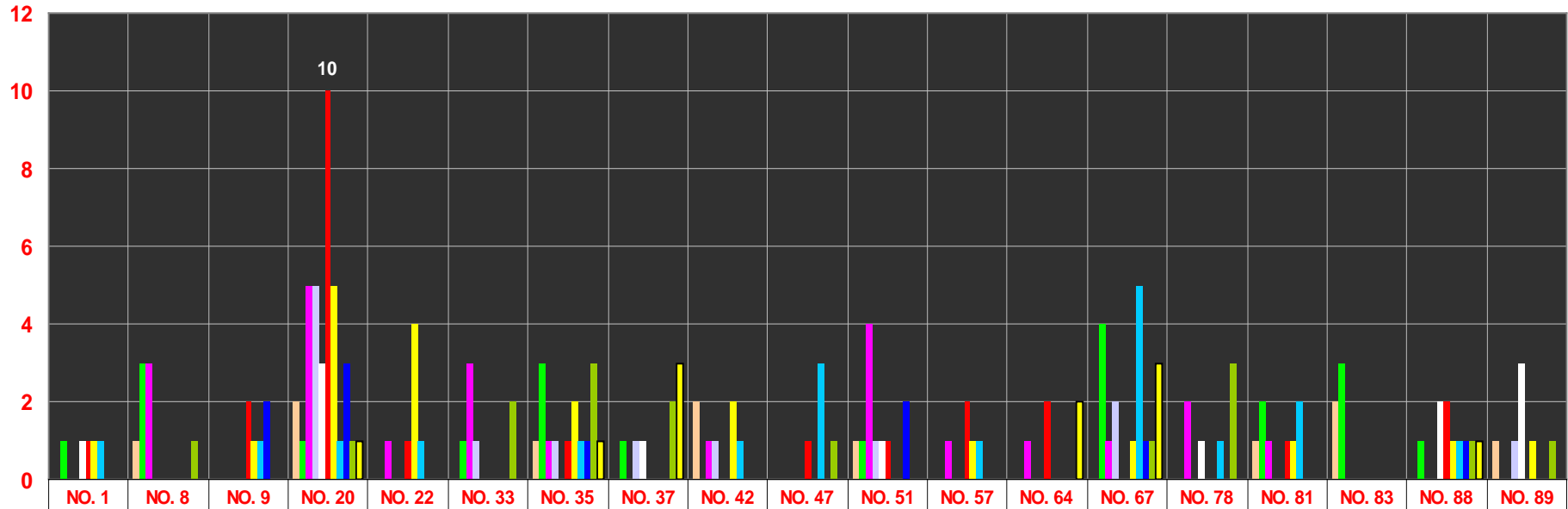
Average cost for DRG CO3Z (retinal procedures) for public, private, DVA and TAC for the last five years is:

- 2004 = \$2,736.83
- 2005 = \$2,799.20
- 2006 = \$2,736.49
- 2007 = \$2,750.98
- 2008 = \$2,913.80

## Number of Endophthalmitis Cases from Other Service Providers 1997 - 2007

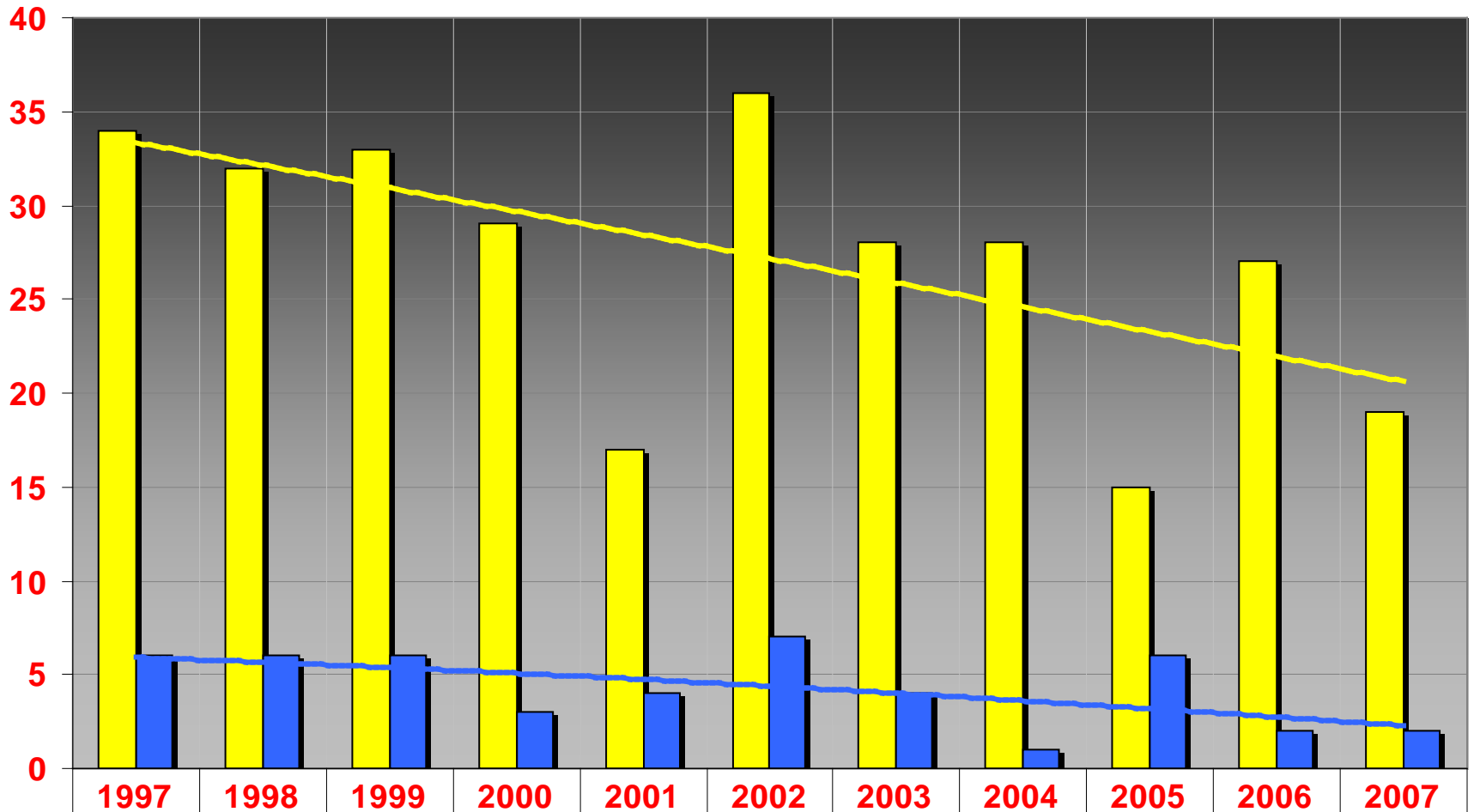


# Number of Endophthalmitis Cases from Other Service Providers 1997 - 2007



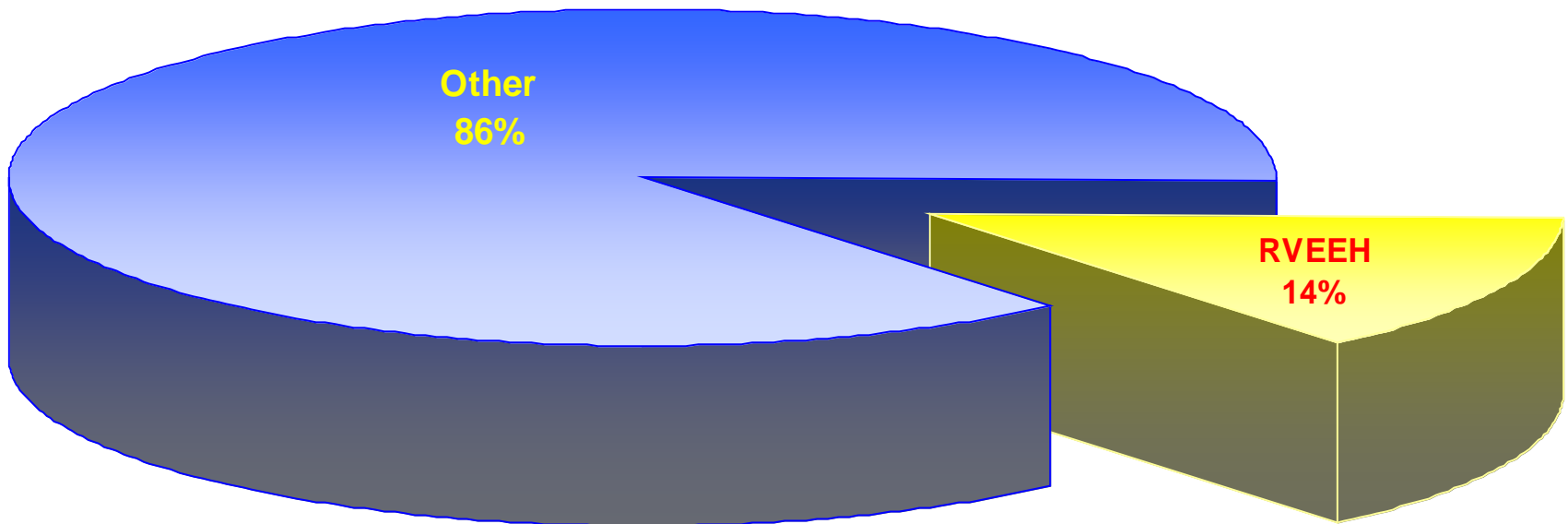
	NO. 1	NO. 8	NO. 9	NO. 20	NO. 22	NO. 33	NO. 35	NO. 37	NO. 42	NO. 47	NO. 51	NO. 57	NO. 64	NO. 67	NO. 78	NO. 81	NO. 83	NO. 88	NO. 89
yr 1997	0	1	0	2	0	0	1	0	2	0	1	0	0	0	0	1	2	0	1
yr 1998	1	3	0	1	0	1	3	1	0	0	1	0	0	4	0	2	3	1	0
yr 1999	0	3	0	5	1	3	1	0	1	0	4	1	1	1	2	1	0	0	0
yr 2000	0	0	0	5	0	1	1	1	1	0	1	0	0	2	0	0	0	0	1
yr 2001	1	0	0	3	0	0	0	1	0	0	1	0	0	0	1	0	0	2	3
yr 2002	1	0	2	10	1	0	1	0	0	1	1	2	2	0	0	1	0	2	0
yr 2003	1	0	1	5	4	0	2	0	2	0	0	1	0	1	0	1	0	1	1
yr 2004	1	0	1	1	1	0	1	0	1	3	0	1	0	5	1	2	0	1	0
yr 2005	0	0	2	3	0	0	1	0	0	0	2	0	0	1	0	0	0	1	0
yr 2006	0	1	0	1	0	2	3	2	0	1	0	0	0	1	3	0	0	1	1

## Endophthalmitis Cases RVEEH & External 1997 2007



<span style="color: yellow;">■</span> Other	34	32	33	29	17	36	28	28	15	27	19
<span style="color: blue;">■</span> RVEEH	6	6	6	3	4	7	4	1	6	2	2

**Number of Endophthalmitis cases  
RVEEH & External Agencies  
1997 - 2007**



**J Cataract Refract Surg; 33:978-988 33, June 07”**  
**Prophylaxis of postoperative endophthalmitis  
following cataract surgery: Results of the  
ESCRS multicenter study and identification of  
risk factors**

Purpose of study:

- Identify risk factors
- Effects of antibiotic prophylaxis on the incidence of postoperative endophthalmitis after cataract surgery

# ESCRS Study

- 24 hospitals took part in the study based in 9 countries
- Intent to treat (ITT) – 16211 patients
- Group A (pt no – 4054) - No perioperative antibiotic prophylaxis
- Group B (pt no 4056) - Received intracameral cefuroxime
- Group C (pt no 4049) - Received topical levofloxacin only
- Group D (pt no 4052) – Received intracameral cefuroxime injection & topical levofloxacin

Total endophthalmitis incidence rates  
in each of the 4 groups

	Incidence rates(%)
Group A	0.326
Group B	0.074
Group C	0.247
Group D	0.049

# Conclusion

- Will intracameral injection post cat surgery helps to reduce the RVEEH endophthalmitis rates further - ???
- A credit to all RVEEH HCW for the low rate of post Cataract Endophthalmitis

Thanks for your attention.

Special thanks to Pat Usher