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ECLSO

European Contact Lens and  
Ocular Surface Congress

EUROPEAN CONGRESS  
ON MYOPIA CONTROL

2 - 3  
September  
2022

Novotel Tour Eiffel

Paris - France



EUROPEAN CONTACT  
LENS SOCIETY OF  
OPHTHALMOLOGISTS

**Session : Update on infectious keratitis**

Friday September 2nd, 2022

09:00 - 10:00

# RISK FACTORS FOR INFECTIOUS KERATITIS

**Prof Parwez Hossain**

**King James IV Professor in Surgery**

**University Hospitals Southampton**

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**Speaker's name : Professor Parwez Hossain, Southampton, UK**

I have the following potential conflicts of interest to report:

Ocular Tissue Advisor for NHS Blood & Transplant, UK

No Financial conflicts

THE ROYAL COLLEGE OF OPHTHALMOLOGISTS

# Focus



An occasional update commissioned by the College.  
The views expressed are those of the authors

Autumn  
2013

Stephen Tuft MCh, MD, FRCOphth  
Matthew Borrett PhD, FRCOphth  
Moorfields Eye Hospital NHS Foundation Trust

## Microbial keratitis

# 4 million

Contact Lens wearers in the UK!

*\*BCLA data*

6,000

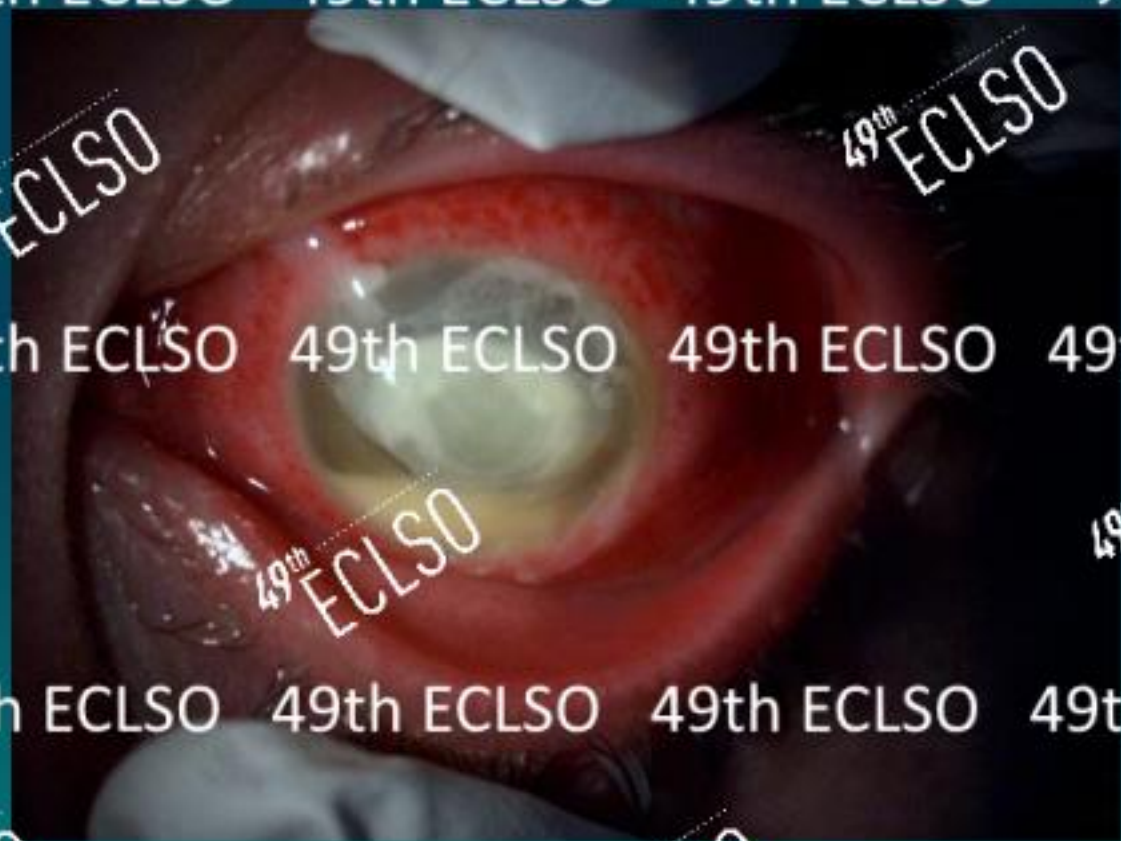
Estimated Corneal Infection cases per year in the UK!



***Pseudomonas aeruginosa***  
common bacterium in the  
environment



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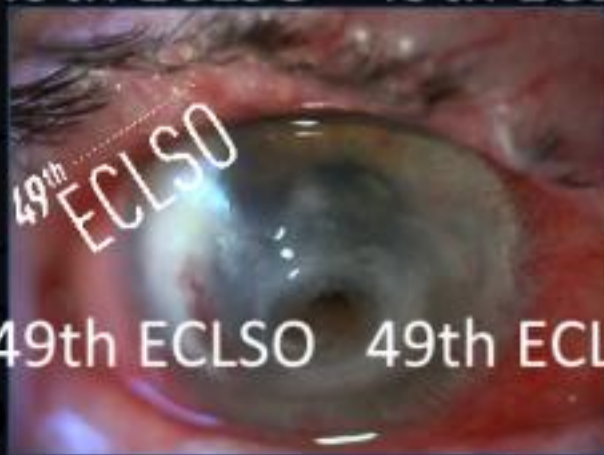
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# Contact lens related

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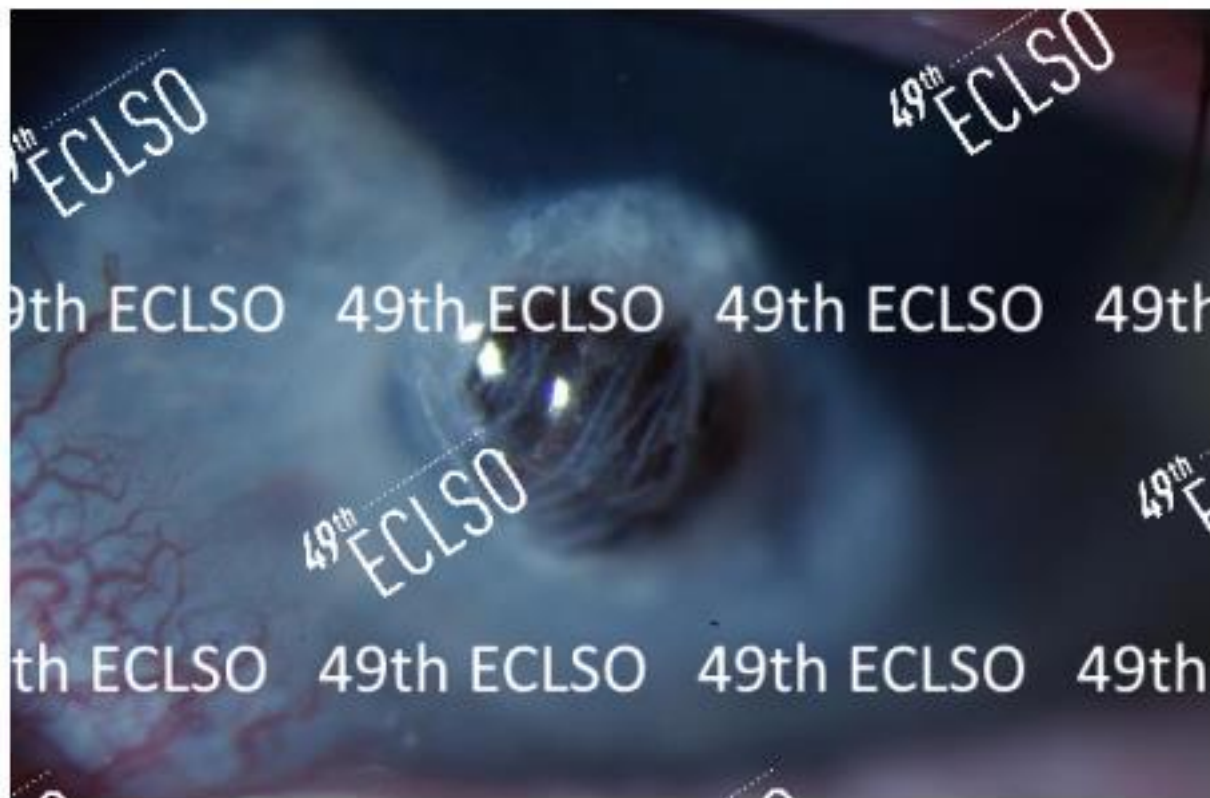
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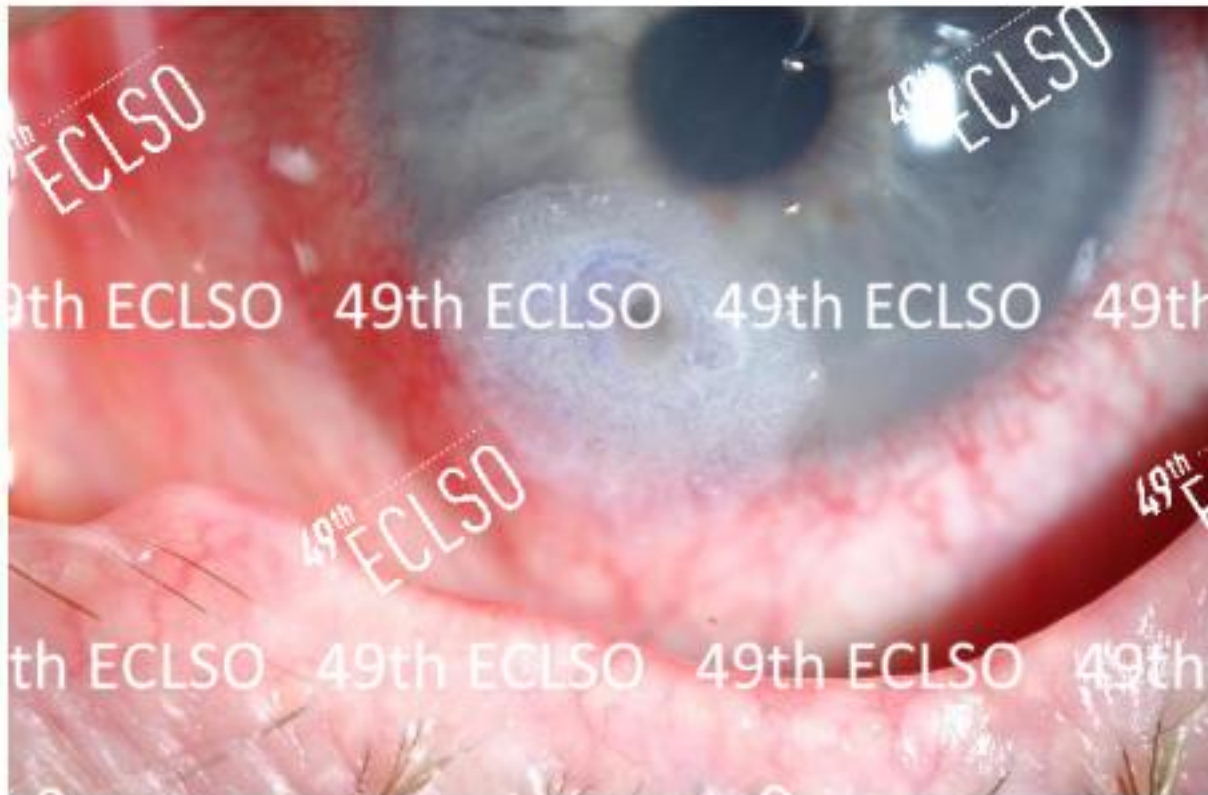
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# Corneal Perforation

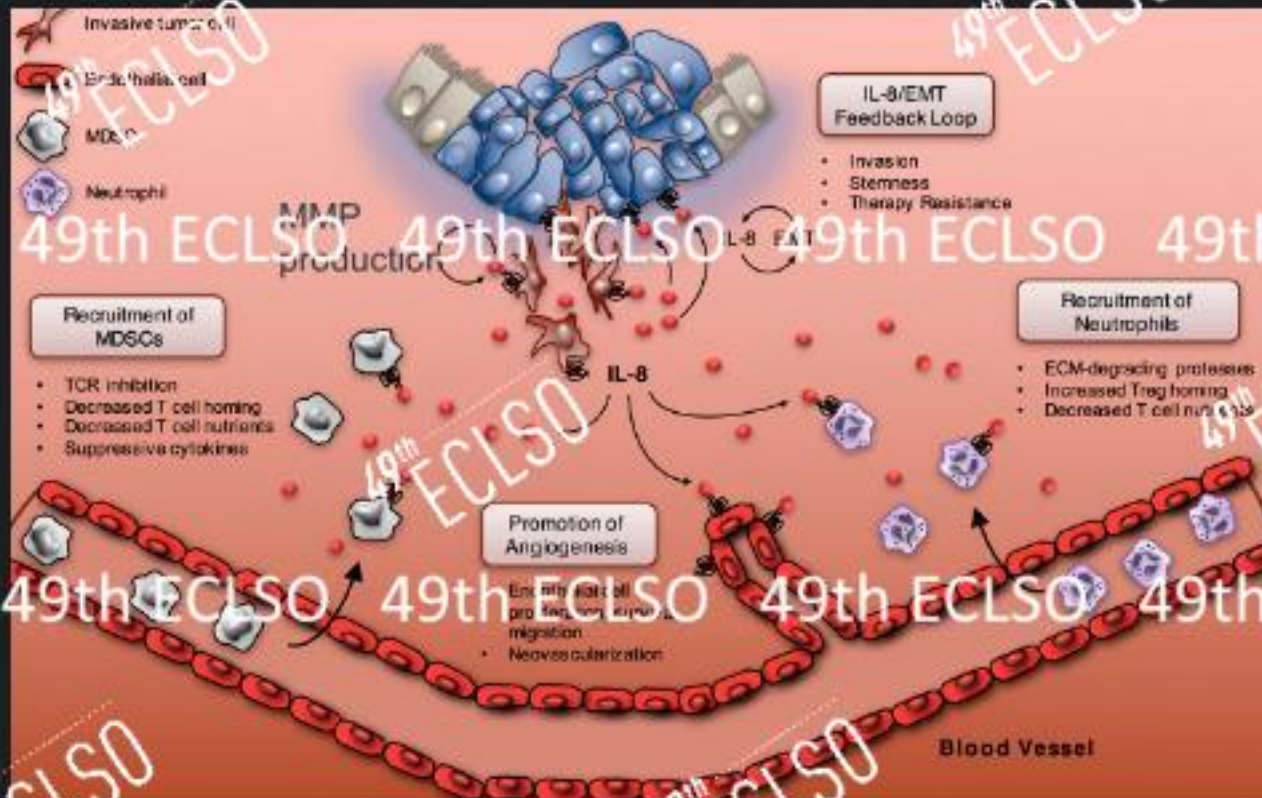


# Corneal Perforation treated with gluing



## Inflammatory Cascade &

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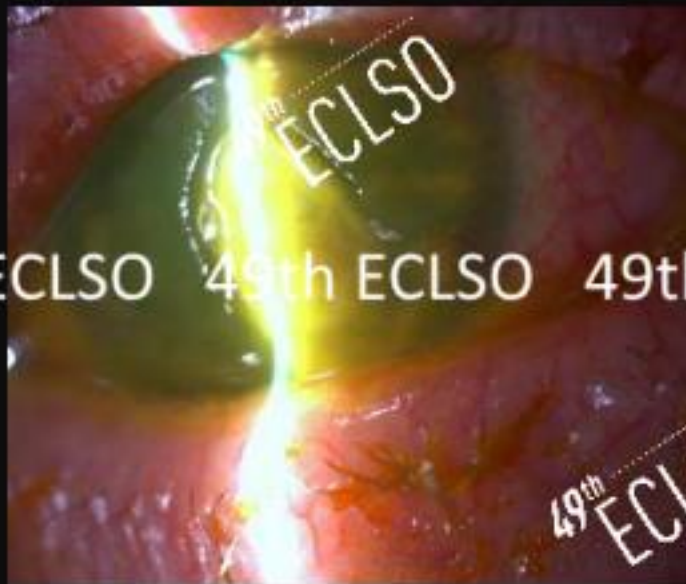
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# Anterior segment OCT

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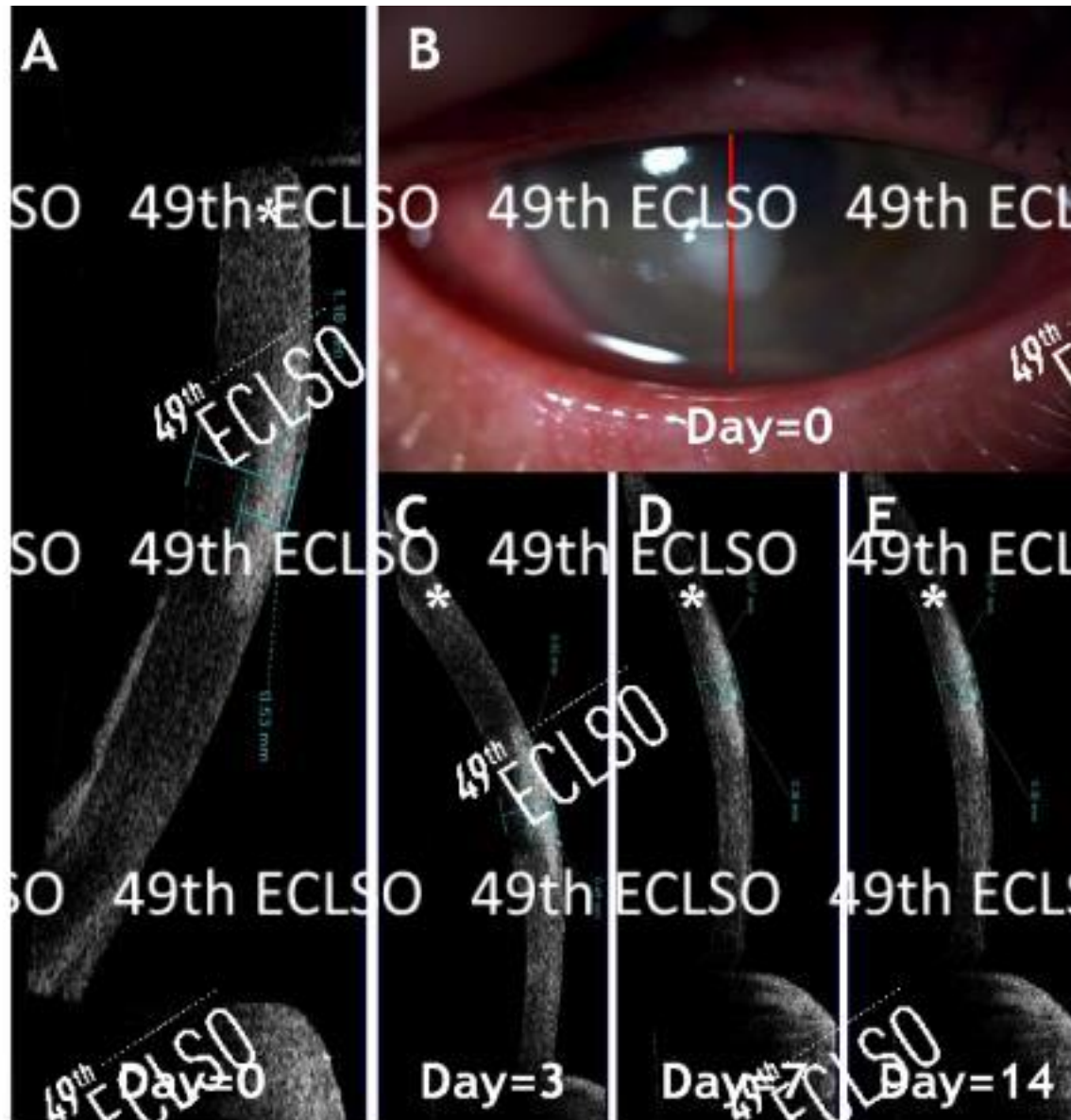


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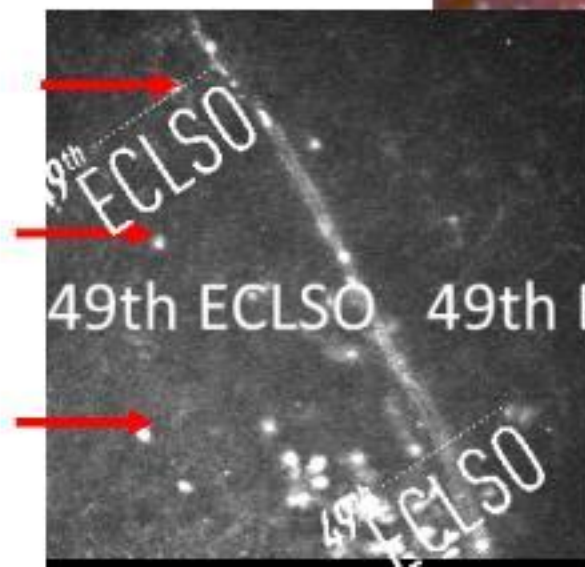
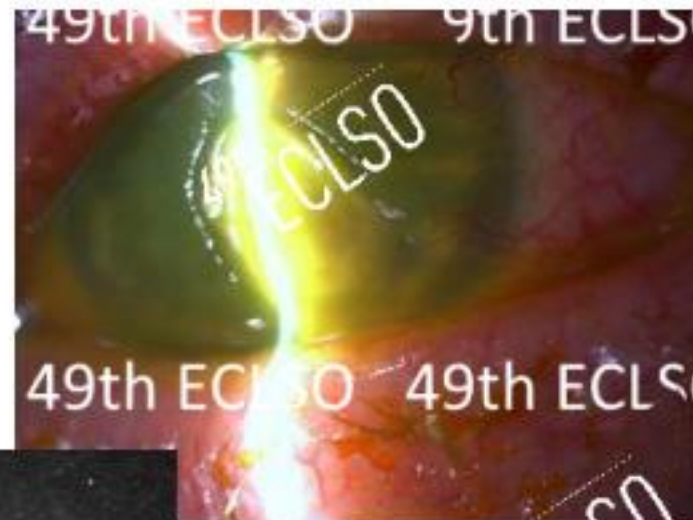
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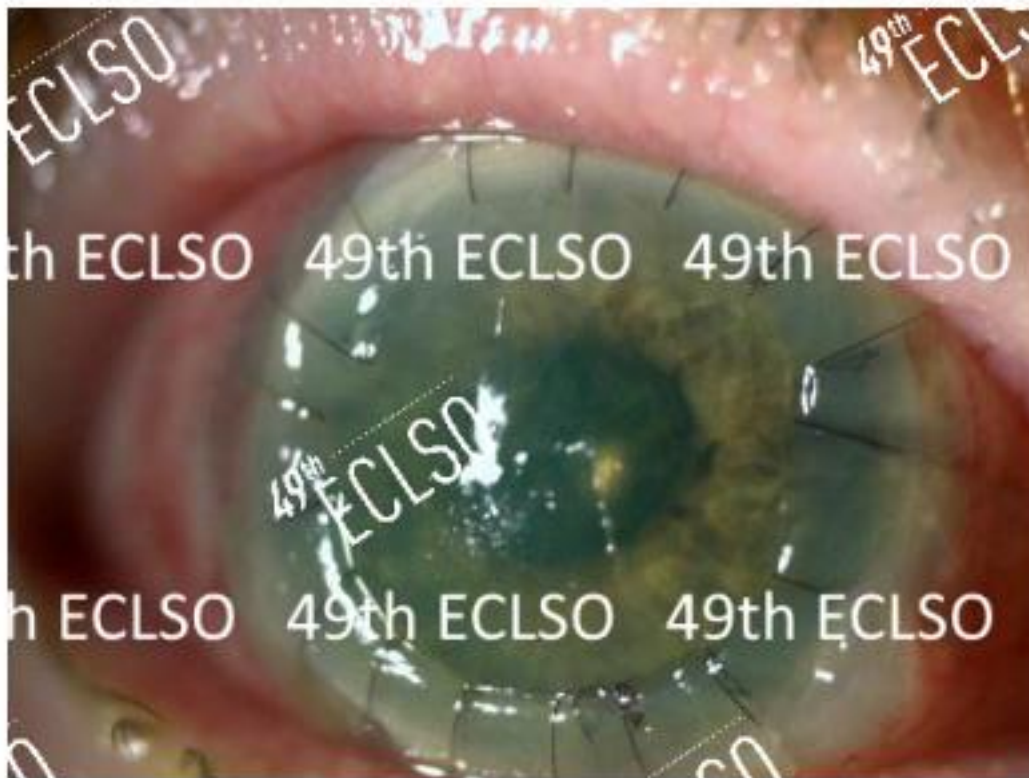


## Southampton Protocol - Imaging

- Anterior segment photos
- Anterior segment OCT
- In vivo confocal microscopy

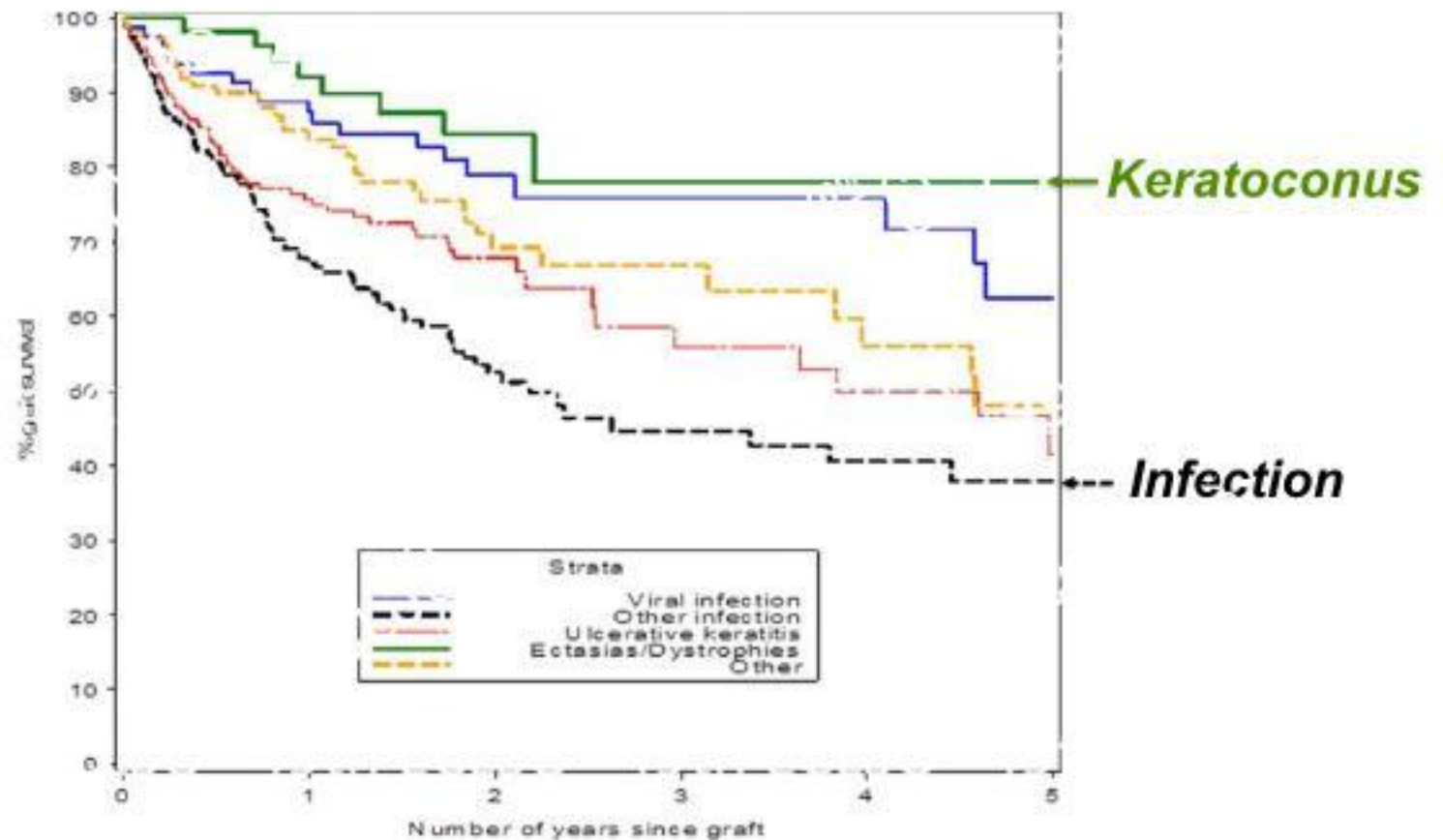


# Post-Penetrating Keratoplasty



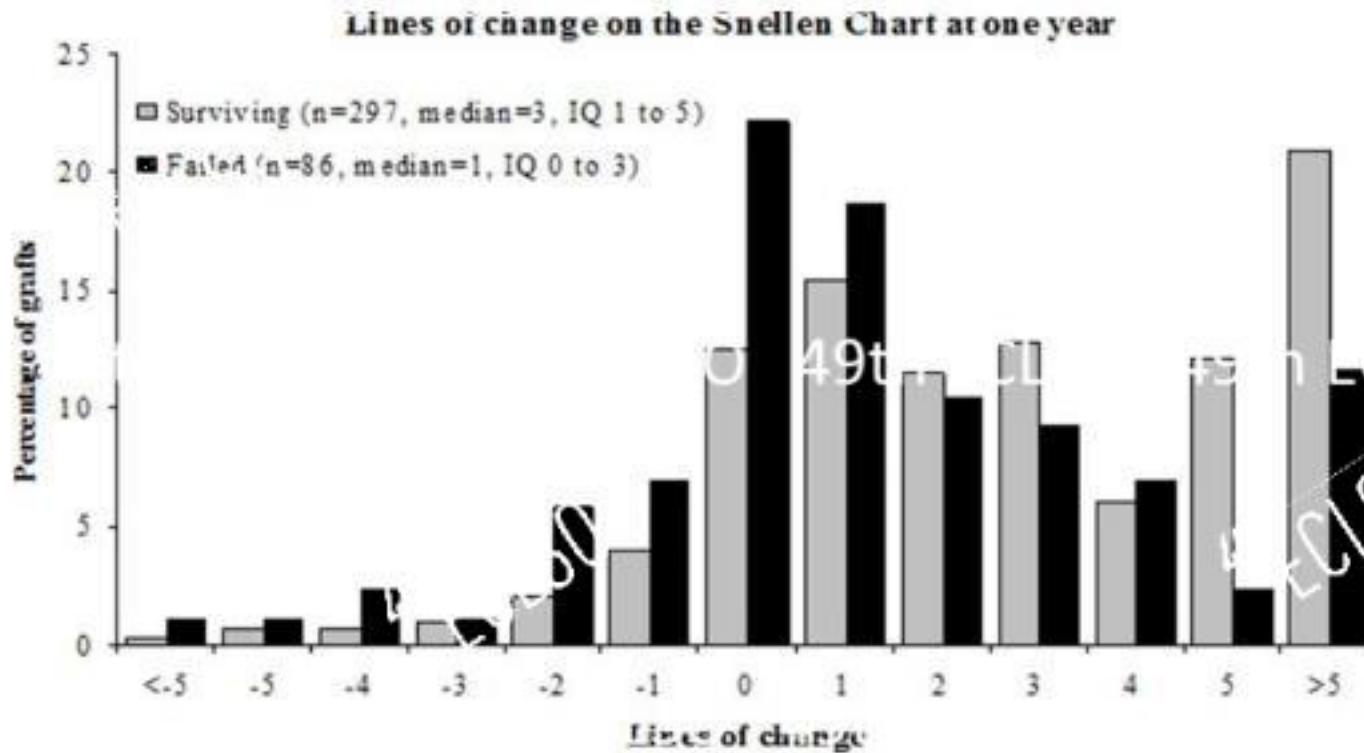


## Survival of emergency corneal grafts according to indication

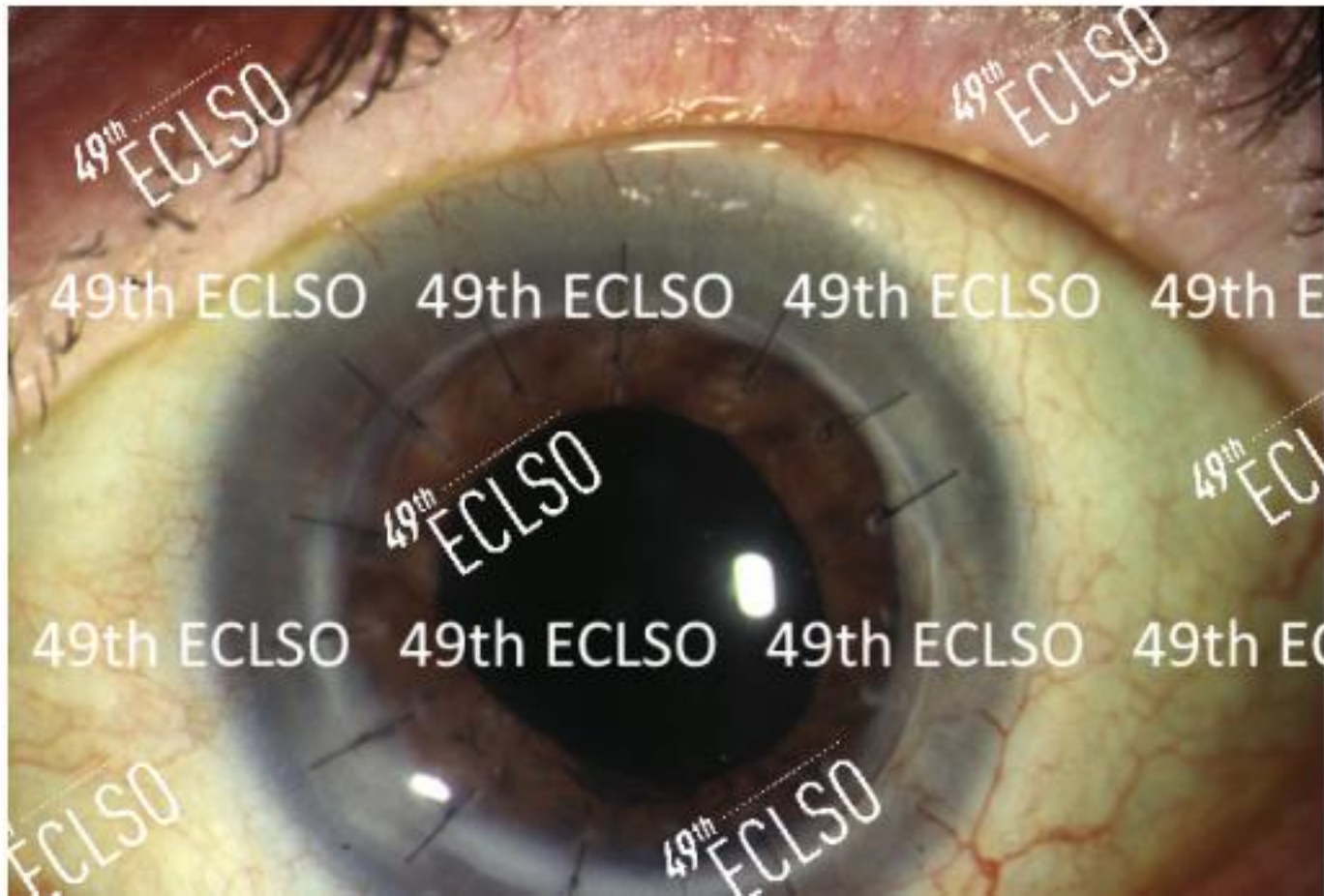


Parvez Hossain et al. Br J Ophthalmol 2018;102:26-30

Lines of change on the vision at Snellen chart.



# Corneal Perforation treated with Tectonic Keratoplasty



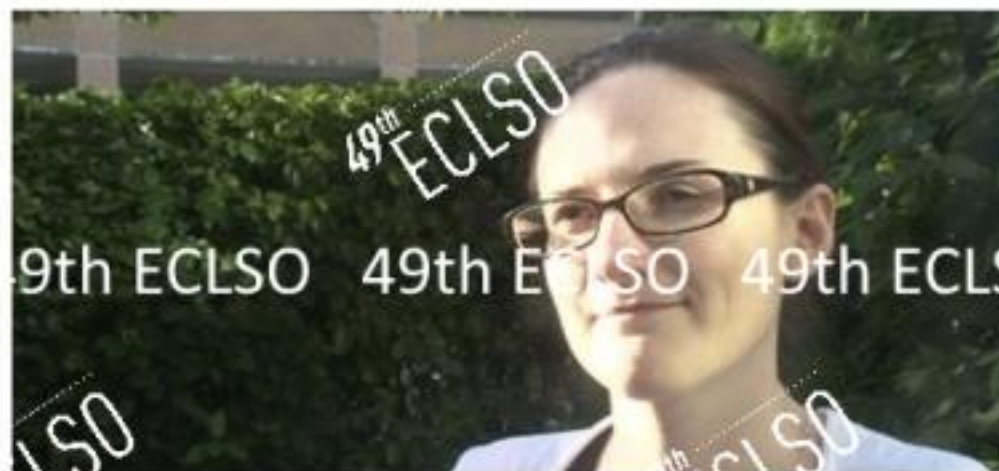
# NEWS 49th ECLSO 49th ECLSO 49th ECLSO

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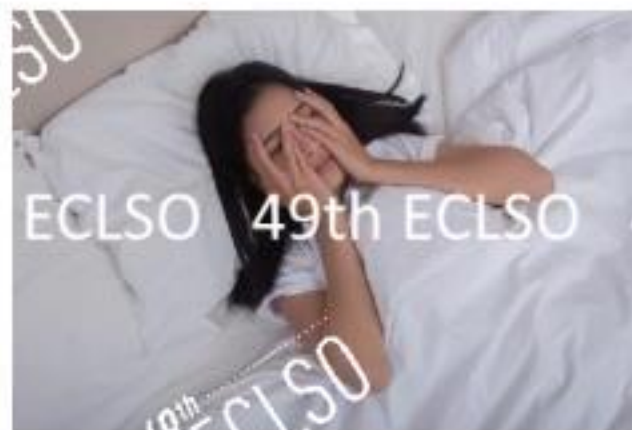
England | Local News | Regions | Hampshire & Isle of Wight

## Southampton woman lost sight swimming in contact lenses

© 29 August 2012



# Personal Hygiene & Contact Lens Wear







Original research

BMJ Open  
Ophthalmology

## Personal hygiene risk factors for contact lens-related microbial keratitis

Anna Stellwagen <sup>1,2</sup> Cheryl MacGregor,<sup>1</sup> Roger Kung,<sup>1,2</sup>  
Aristides Konstantopoulos,<sup>1</sup> Parwez Hossain <sup>1,2</sup>

Statistics from Altmetric.com



- Case-control study was conducted at the University Hospital Southampton Eye Casualty n=78 cases examined
- Contact lens wearers presenting with microbial keratitis vs were contact lens wearers without infection (controls)
- 37 cases and 41 controls

Face-to-face interviews  
(validated questionnaire) to  
identify lens wear practices

- lens type, hours of wear,
- personal hygiene & sleeping  
and showering in lenses
- Univariate and multivariate  
regression models were used  
to compare



**Table 1**

Data collected for cases and controls in standardised face-to-face questionnaires

Collected data	Description
Data collected for cases and controls	
Demographics	Age, sex
Lens type	RGP, SCL, STWO, SMO or SEW
Wear habits and water exposure	Wear frequency, wear duration Sleeping in lenses Showering/bathing in lenses Swimming in lenses
Hygiene practices	Hand washing effort/handling lenses Lens case use, storage location and replacement frequency Contact lens soaking duration
Lens purchasing history and follow-up	Frequency of contact lens aftercare appointment with contact lens practitioner Where lenses are purchased Were lens infections/complications explained when lenses first prescribed? Who should be responsible for providing information about risks of contact lens wear? How lens care advice should be given
Additional data collected for cases (FS, CLMK, vision loss after infection)	Time to first consultation or visit
Thoughts of giving up contact lenses after infection	Concerns over recurrence, vision loss, memories of symptoms
Quality of life after infection	Affecting work, sight, sports, etc., contacts, physical appearance

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 Anna Stollwagen et al. *BMJ Open Ophthalmology* 2020;5:e000476

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# Risk factors for Contact Lens Microbial Keratitis

Patient demographics

Contact lens wear habits eg sleeping in lenses

Hygiene practices—water exposure

Purchasing & aftercare follow-up history

Factor	OR	95% CI	P-value
<b>Demographics</b>			
<b>Age</b>			
> 55	1.00 (reference)		
< 24	1.00	0.20 to 4.96	1.000
25-39	6.38	1.56 to 26.10	0.010**
40-54	4.00	0.96 to 16.61	0.056
<b>Gender</b>			
Female	1.00 (reference)		
Male	2.05	0.81 to 5.22	0.131
<b>Contact lens wear habits</b>			
<b>Contact lens type†</b>			
RGP	1.00 (reference)		
SDD	3.93	0.34 to 38.70	0.241
STWD	10.00	0.78 to 128.78	0.077
SEW	2.50	0.10 to 62.61	0.577



# Sleeping in Contact Lenses?

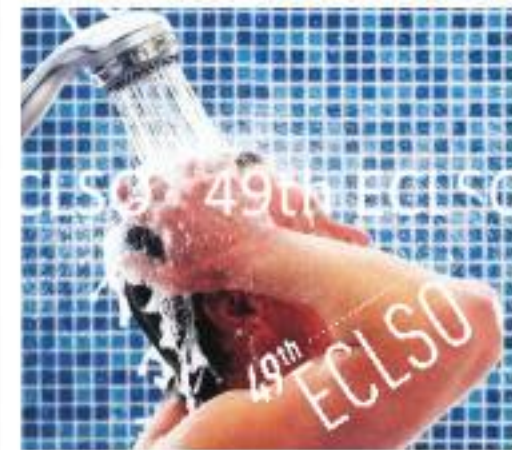
Frequency of sleeping in contact lenses

Never	Odds Ratio	Range	P value
	1.00 (referent)		
Few times a year	2.33	0.67 to 8.06	0.183
Few times a month	1.46	0.79 to 2.71	0.218
Daily	2.18	0.34 to 14.15	0.413



# Showering in Lenses?

RISK FACTOR	OR	95% CI	P VALUE
No	1.00 (referent)		
<b>Yes</b>	<b>3.13</b>	<b>1.16 to 8.47</b>	<b>0.025*</b>
Frequency of showering in contact lenses			
Never	1.00 (referent)		
Few times a year	0.59	0.06 to 6.18	0.663
Few times a month	2.38	0.54 to 10.53	0.255
Few times a week	1.70	0.41 to 6.98	0.464
<b>Daily</b>	<b>7.13</b>	<b>2.06 to 24.61</b>	<b>0.002**</b>



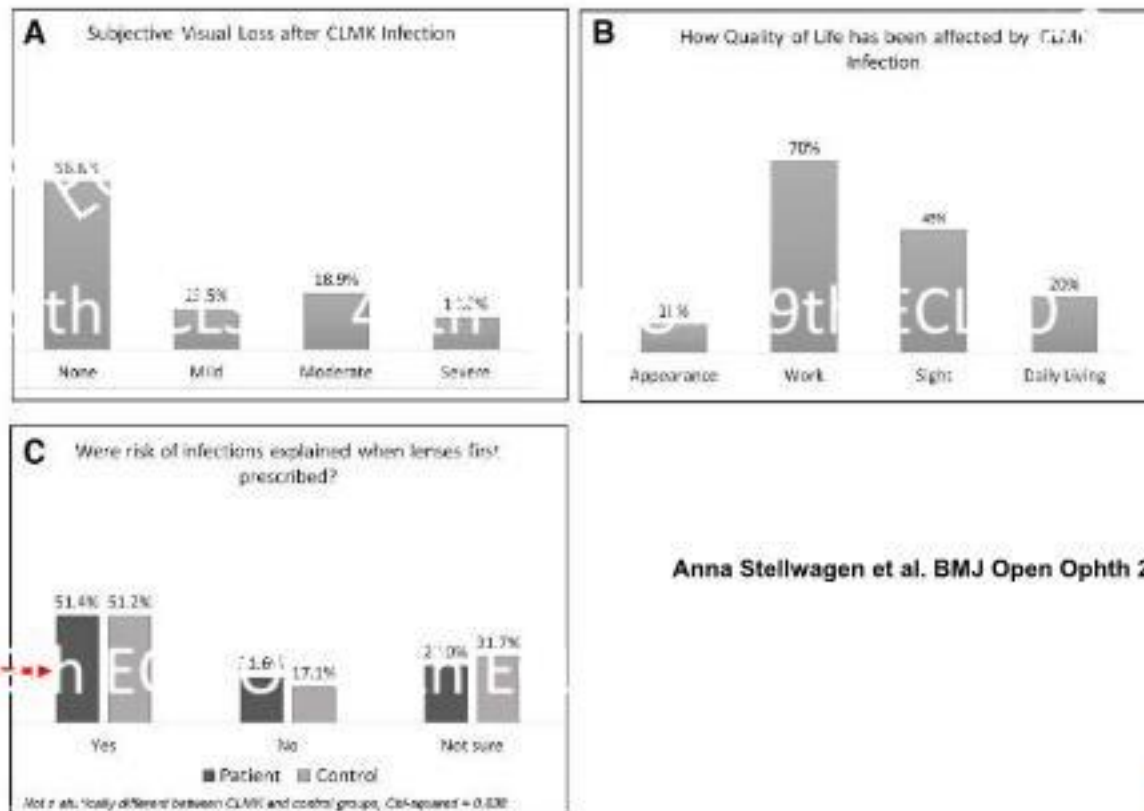
# Swimming in Contact Lenses?

RISK FACTOR	OR	95% CI	P VALUE
No	1.00 (referent)	Range	P value
Yes	0.85	0.34 to 2.13	0.723
Frequency of swimming in contact lenses			
Never	1.00 (referent)		
Few times a year	0.92	0.34 to 2.46	0.580
Few times a month	0.58	0.043 to 5.874	0.229



**Contact Lens Keratitis episode  
(A) affected patients' vision  
(B) and quality of life and  
(C) Responses for question: 'Were risks of infections explained when lenses first**

Visual outcomes and attitudes towards contact lenses after CLMK



Anna Stellwagen et al. *BMJ Open Opth* 2020;5:e000476

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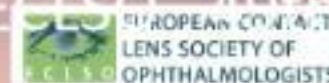
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## Summary - Update on infectious keratitis / Risk Factors

- Despite good advice from their optometrist/contact lens practitioners: **some contact lens wearers perform poor hygiene practices**
- Showering in contact lenses daily increases the risk of microbial keratitis by >7 times
- **Other risk factors**
  - Sleeping in lenses
  - Ages 25-39
- **Contact Lens wearers have to be reminded that Infection risks have to be taken seriously!**



### Other updates:

- In vitro / Clinical Evidence for Pseudomonas infection; Lead to severe corneal damage (in a few hours and perforation in a few days – implications for earlier antibiotic use)
- **Anterior Segment OCT** can help to give guidance on treatment response (& kind of bacterial infection and early targeting of antimicrobials-data not shown)
- Despite what might look like a poor prognosis: **Emergency therapeutic keratoplasty is a sight-saving operation**, even in late graft failure

### CAUTION

Contact lenses  
and water  
don't mix!



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For more information, visit: [eclsa.org.au/tap](http://eclsa.org.au/tap)



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Thank You For Your Attention

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