

## THE INSTITUTE OF OPTOMETRY



"The Institute of Optometry is unique in being an independent self-financing charity dedicated to the promotion of clinical excellence, research, and education in optometry."  
Roberson (1989)

## Non-tolerance: causes, avoidance, opportunity

Prof Bruce Evans

BSc (Hons) PhD FCOptom FAAO FEAOO FBCLA DipCLP DipOrth

Director of Research  
Visiting Professor  
Visiting Professor  
Private practice

Institute of Optometry  
City University  
London South Bank University  
Cole Martin Tregaskis, Brentwood, Essex

© 2014-2017 Bruce Evans

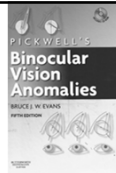
Full handout from: [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

Follow @BruceJWEvans

for regular tweets on optometric research

### DISCLOSURE

- Paid lectures, KOL/product feedback, research funding:
  - Alcon, American Academy of Optometry (UK), Association of Optometrists, Birmingham Focus on Blindness, Black & Lizars, British Contact Lens Association, Central (LOC) Fund, Cerium Visual Technologies, College of Optometrists, Cooper vision, ESRC, General Optical Council, Hoya, Institute of Optometry, Iris Fund for Prevention of Blindness, Johnson & Johnson, Leightons, MRC, Norville, Optos, Paul Hamlyn Trust, Perceptive, Scrivens, Specsavers, Thomas Pocklington Trust
  - Lecture content always my own
- Author of Pickwell's Binocular Vision Anomalies, editions 3-5
- I.O.O. Sales Ltd markets IFS orthoptic exercises, which the speaker designed, and for which he receives a small royalty
- Community optometric practice in Brentwood, Essex



### COLE MARTIN TREGASKIS OPTOMETRISTS

23 SHENFIELD ROAD  
BENTWOOD  
ESSEX, CM15 8AG  
01277 511166 FAX 01277 511167  
WEB: [www.colemartintregaskis.co.uk](http://www.colemartintregaskis.co.uk)  
INCORPORATING: A HIGH STREET OPTOMETRISTS 29 BRIDGE OPTOMETRISTS 8 ADELPH OPTOMETRISTS 15 A

Principal optometrist: Prof B.W. Evans BSc PhD FCOptom DipCLP DipOrth FAAO FBCLA  
Senior optometrists: Miss L. Cook BSc MRB MCOptom Dr C. O'Leary BSc PhD MCOptom  
Staff optometrists: Miss A. Shah BSc MRB MCOptom Mr L. Marshall BSc Phys BSc (Optom) MCOptom  
Senior optician: Mrs J. Powell FRCO Staff optician: Mr N. Galtara FRCO

## PLAN

CLASSIFICATION

WHY

PREVALENCE

AVOIDANCE

CONCLUSIONS

© 2017 Bruce Evans

Handout from [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

Follow @BruceJWEvans

for regular tweets on optometric research

### Classification of spectacle non-tolerance

- Two main types (Priest, 1979)
  - Dispensing non-tolerance – main causes (Farrell, 2005):
    - Incorrect frame fitting
    - Optical centration problems
    - Spectacle magnification problems
    - Cosmetic reasons
    - Mis-communication
  - Prescription non-tolerance
    - "a prescription that the patient finds so hard to tolerate that they return to the prescriber" (Freeman & Evans 2010)

### Classification of Rx non-tolerance (Ball, 1977)

Practitioner orientated	Dispensing errors and associated problems Faulty refraction and prescription Undetected or subsequently developed abnormality
Patient orientated	Management of initial examination Adaptation problems Psychology Motivation; expectation; dissatisfaction
Practitioner/patient relationship	Attitudes; personality patterns Practice environment

## PLAN

CLASSIFICATION

WHY

PREVALENCE

AVOIDANCE

CONCLUSIONS

© 2017 Bruce Evans

Follow @BruceJWEvans

Handout from [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

for regular tweets on optometric research

## Goal of subjective refraction (Duke-Elder & Abrams, 1970)

- “to provide the patient with the optical correction nearest to the optical ideal with which he sees best and is most comfortable”
- Non-tols are really an “adverse effect of an optical prescription”

## Adverse effects of optical Rx's (Ball, 1977)

Symptom-type	Adverse effects or presenting symptom	Examples of possible aetiology
Sympathetic or referred	Headaches and/or discomfort referred to ocular adnexa Mild vertigo or dizziness	High presbyopic additions Faulty lens centration Decompensated heterophoria New prismatic corrections Relative prismatic effects
Disorders of visual perception and binocular vision	Micropsia	Recently corrected myopia Base out prisms
	Macropsia	Recent presbyopic additions Base in prisms
	General spatial distortions	Corrected anisometropia Change of lens form Unaccustomed cylinders
Peripheral spatial distortion Blurred vision	Peripheral spatial distortion	Some multifocals Incorrect effective power Incorrect positioning of bifocals/multifocals
	Blurred vision	Off axis blur from high index lenses Inappropriate vocational use Residual uncorrected errors Faulty lens centration
Others	Diplopia	
	Chromatopsia	High additions in some fused bifocals
	Photophobia Ghost images	Omission of previously worn tints Reflection from lens or other surfaces

## Are some non-tols inevitable? (Evans, 2012)

- 95% limits of repeatability of subjective refraction are circa  $\pm 0.50D$  to  $0.75D$   
MacKenzie (2008); Shah et al. (2009)
- in spectacle non-tols the final Rx is within  $\pm 0.50D$  of the not tolerated one in 84% of cases  
Freeman & Evans (2010)
- a significant number of wearers notice errors in distance vision, as small as  $+0.25D$  in sphere and cylinder  
Miller et al. (1997)
- So, some non-tols are inevitable

## PLAN

CLASSIFICATION

WHY

PREVALENCE

AVOIDANCE

CONCLUSIONS

© 2017 Bruce Evans

Follow @BruceJWEvans

Handout from [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

for regular tweets on optometric research

## Prevalence of prescription non-tols (Freeman & Evans, 2010; Evans, 2012)

- Non-tols occur in 1.8% of eye exams
  - Range (7 optoms) 1.3% to 3.3%  
Freeman & Evans (2010)
- This has been estimated to be 2.8% of those who are prescribed spectacles  
Howell-Duffy et al. (2010)
- But, this research excluded cases that had been dealt with by a dispensing optician  
Freeman & Evans (2010)



## Demographics of prescription non-tols

(Freeman & Evans, 2010)

- 3091 eye exams in 6/12
  - Large independent optometric practice, 11 optoms in 5 consulting rooms
  - 62 non-tols; 59 included
- Most common in 50-59y
- 88% of non-tols presbyopes
- Male = female
- None were neophytes (not significantly different to control group)
- All could be resolved with an adjustment of 1.00D
  - 84% with 0.50D adjustment

Investigation of the causes of non-tolerance to optometric prescriptions for spectacles

Estimate E. Freeman<sup>1</sup> and Bruce J. W. Evans<sup>2,3</sup>

<sup>1</sup>Optical Optometrist, 442 Fitz Street, Reading, Berkshire, RG2 1AF, <sup>2</sup>Department of Optometry & Visual Science, City University, Northampton Road, London EC1N 2UH, and <sup>3</sup>Faculty of Optometry, 65-67 Bedford Way, Cambridge, United Kingdom CB2 3RQ, UK

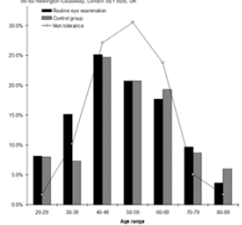


Figure 2. Age profile of patients attending a routine eye examination (black bars) compared with the control group of patients collecting spectacles (grey bars) and patients receiving a non-tolerance examination (line).

## Reasons for non-tol examinations

(Freeman & Evans, 2010)

- Prescription related 61%
- Dispensing related 22%
- Pathology 8.5%
- Data entry error 6.8%
- Binocular vision 1.7%



## Prescription related non-tols (61%)

(Freeman & Evans, 2010)

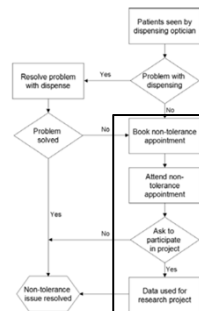
- Error measuring the sphere
  - 20% of all non-tols
  - Half plus – all over-plussed
  - Half minus – most under-minussed
- Error with NV/IV addition
  - 17% of all non-tols
  - 2/3 of these over-plussed
- Errors with cyl
  - 10% of all non-tols
- Errors with sphere & cyl (3%)
- Errors relating to adaptation
  - 10% of all non-tols
  - For 1/3 returned to old Rx



## Dispensing related non-tols (22%)

(Freeman & Evans, 2010)

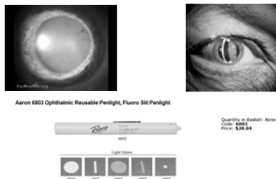
- PAL adaptation
- PAL heights
- SV lens type
- Frame adjustment
- PAL prism thinning
  - A total of 1938 lenses were dispensed during the 6 month period.
  - In this study, the lenses that were most often not tolerated were
    - PALS (7.4%)
    - Vocational lenses (4.8%)
    - Single vision lenses (2.0%)
    - Bifocal lenses (0.8%)



## Pathology related non-tols (8.5%)

(Freeman & Evans, 2010)

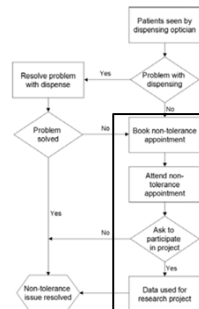
- Cataract in nearly all cases
  - Typically, large Rx change from nuclear sclerosis that caused non-tol when full Rx prescribed
- One case of dry eye



## Data entry non-tols (7%)

(Freeman & Evans, 2010)

- Entering incorrect reading addition
- Entering incorrect spherical Rx
- Using intermediate prescription instead of a distance prescription,
- Making up near vision glasses instead of bifocals



## Binocular vision anomalies (2%)

- Beware of convergence insufficiency associated with ageing  
Freeman & Evans (2010)
- Don't prescribe multifocals to patients with a superior oblique paresis  
Evans (2007)
- Don't prescribe monovision to patients with marked incomitancy  
Evans (2007)



## PLAN

CLASSIFICATION

WHY

PREVALENCE

**AVOIDANCE**

CONCLUSIONS

© 2017 Bruce Evans

Follow @BruceJWEvans

Handout from www.bruce-evans.co.uk

for regular tweets on optometric research

## Avoidance – dispensing

- Wrong product dispensed correctly or right product dispensed incorrectly?
- Many PAL issues can be corrected by frame adjustment
  - Check DV fitting crosses & NV fitting crosses using mirror – is inset correct?
  - Prism thinning occasionally causes non-tols:
    - Px having to lower their head for D & raise for N
    - Severely limited D field of view
    - Pulling or drawing sensation
    - Blurred band across intermediate channel
    - Lenses "just not feeling right"
    - Try base up prism from trial set over glasses – if helps then prism thinning may be the problem
- Warn new aspheric wearers that need to adapt
  - Should be decentered 1mm downwards for every 2° of frame tilt
  - If not done at time of dispensing then can compensate by adjusting frame tilt



Bates, Optometry Today, Jan 2016

## Avoidance – dispensing

- Aniseikonia from anisometropia
  - Can dispense aspheric lens to most positive powered eye to reduce spectacle magnification – check MAR coatings match
  - Or, order larger uncut lens for least positive eye
  - For myopes consider slab-off lens to most myopic eye, using flat-top bifocals or some PALs, or unequal size round segs
- Off-axis blur in larger frames: consider
  - Frame tilt
  - face form angle (bow)
  - Vertical lens centration
  - Base curves

Bates, Optometry Today, Jan 2016



## Avoidance – dispensing

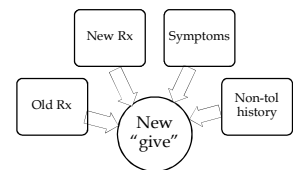
- Wrong product dispensed correctly or right product dispensed incorrectly?
- Many PAL issues can be corrected by frame adjustment
- Warn new aspheric wearers that need to adapt
- Be alert to issues relating to aniseikonia from anisometropia
- Off-axis blur in larger frames: consider
  - Frame tilt
  - Face form angle (bow)
  - Vertical lens centration

Bates, Optometry Today, Jan 2016



## Avoidance – prescribing

- Applying "If it ain't broke don't fix it" rule would prevent 1/3 of non-tols
- Measure working distance & don't over-plus
- Experienced practitioners modify their Rx to reduce risk of non-tol – partial prescribing



## Avoidance – modifying (partial prescribing)

- Howell-Duffy et al. (2011):
- The likelihood of partial prescribing increased by 34% for every 10y of experience
  - After a 40y career, practitioners would be 3x more likely to modify
- Practitioners underestimate problems from cyl axis, especially if oblique
- Examples of partial prescribing
  - If find less myopia than current glasses, don't prescribe full reduction
  - If large cyl axis change, partially prescribe
  - First time hyperopic prescription, partially prescribe
  - Partially prescribe large changes in sphere or cyl

## Avoidance – communicate

- Warn patients that the average time to adjust to spectacles is 1 week Strang et al. (1998)
- Adaptation can take 1-2 weeks for large changes, especially in astigmatism Elliott & Howell-Duffy (2015)
- Give extra warning if problems more likely
  - E.g., first pair of PAL lenses

## Introduction to communication skills

- The speaker's personal perspectives from 30 years in practice
- Advanced communication is about customising what you ask and explain accordingly
  - Some people are naturally better at communication, but everyone can learn and can improve
  - An empathic disposition helps
  - Think about what people are thinking
  - What fears, anxieties, and other motivation underlay what we say?

## Challenging patient 6: the non-tol

- Set the scene
  - Greet as warmly as usual
  - "I'm sorry that you are having problems. The purpose of today is for me to find out what's going on and to come up with a solution."
- Interpretation:
  - Rare for there to be smoke without fire
- Strategies
  - Be extra thorough
  - Make sure that you have solved the problem
  - Explain what you can and can't do



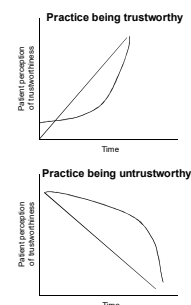
## Other considerations

- One study found increased risk of falls when Rx changed
  - Many of the changes in this study were >0.75D Cummings et al. (2007)
- Nearly 10% of non-tols result from pathology
- A "recheck appointment" should not be rushed
  - Look upon this as an opportunity (see next slide)



## Are you a trusted source?

- What is a trusted source?
- Why you should want to be a trusted source?
  - Patients follow recommendations
  - Attract new referrals
  - Longevity of relationship
- Personal view
  - Gaining trust is non-linear
  - Losing trust is non-linear

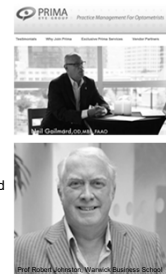


## Becoming a trusted source

1. Assure the patient you know what they want
  2. Assure the patient you want what they want
  3. Give the patient what they want
  4. Explain you are giving the patient what they want
  5. Don't con, don't distort, don't over-sell
- Repeat 1-5 for many years

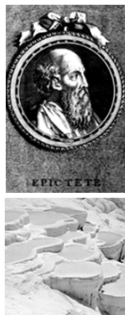
## Look for culture-defining moments

- Gailmard (2014) discussed "culture-defining moment"
  - Gailmard gives the example of "no-shows"
  - The present speaker sees non-tols as culture defining moments
- Johnston (2004): the "recovery paradox"
  - The creation of more delight through good recovery than normal service
  - "What makes excellent service "excellent" and poor service "poor" is very much about how the organisations dealt with problems and queries."



## Service excellence via non-tols

- Non-tols are a culture-defining moment
  - Give them more time
  - Most thorough exam
  - Listen more carefully
  - Epictetus (55-135AD):
    - "We have two ears and one mouth so that we can listen twice as much as we speak."
  - Start with:
    - Listen – repeat – listen
  - End with:
    - Explain – listen – explain



## PLAN

CLASSIFICATION

WHY

PREVALENCE

AVOIDANCE

CONCLUSIONS

© 2017 Bruce Evans  
Handout from [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

Follow @BruceJWEvans  
for regular tweets on optometric research

## Conclusions

- Over 80% of non-tols are presbyopes
- Don't over-plus or under-minus
- The accuracy of refraction ( $\pm 0.75$ ) is worse than the mean adjustment needed to correct a non-tol ( $\pm 0.50$ )
  - So discourage patients from separating prescribing and supply
- Partially prescribe
- Warn about adaptation
- Demonstrate the change
- Consider non-tols as an opportunity by excelling at dealing with these challenging patients



Handout from [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

Follow @BruceJWEvans  
for regular tweets on optometric research