Appendix G: **GRADE and CERQual Tables**

G.1 Patient information

- What information do people with cataracts and their carers find useful, and what format (for example written or verbal) do they prefer it to be provided in?
- What information on cataract surgery do people and their carers find useful when deciding whether surgery is appropriate for them, and before, during and after any operation(s) they elect to undergo? What format (for example written or verbal) do they prefer it to be provided in?

CERQual table

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
At home after diagnosis							
Nijkamp 2002	Focus groups	Patient education – Patients reported to be reassured and relieved when the ophthalmologist or nurse told them worsening off vision is common among patients with a cataract, and that cataract surgery is a reliable and successful procedure.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Nijkamp 2002	Focus groups	Doctor-patient relationship – Patients expected to receive person attention from their doctor and to have the opportunity to ask questions about their eye disease, but acknowledged ophthalmology was one of the busiest departments at the hospital, which meant that an ophthalmology visits was usually fairly brief.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Nijkamp 2002	Focus groups	Social support – Some people felt worried because of negative evaluation of cataract surgery by other people.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Nijkamp 2002	Focus groups	Previous experience – Patients who had already had first eye surgery reported to be more relaxed about their second surgery than their first.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Preparation for surgery at hospital							
Nijkamp 2002	Focus groups	Patient education – Patients suggest that fears about the anaesthetic injection, the operation itself, and not being able to lie quiet during surgery could be reduced by	Not serious	High[1]	Not serious	Moderate[2]	Moderate

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		providing more comprehensive information about the procedure, and what to expect from cataract surgery.					
Nijkamp 2002	Focus groups	Coping strategies – The amount and type of information that patients wanted varied among participants. Some patients indicated they were happy not knowing everything; others appreciated the doctor telling them that no surgery is without risk because this helped them feel more responsible for their own choice of having surgery.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Nijkamp 2002	Focus groups	Doctor-patient relationship – In general, patients preferred oral information over written or interactive information, because it was felt to be more effective at reducing fear because of the interpersonal contact.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Day of surgery							
Nijkamp 2002	Focus groups	Doctor-patient relationship – Trust in the surgeon was an important factor related to fear. In addition to good technical skills, trust was instilled by reassuring comments from the ophthalmologist during surgery.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Nijkamp 2002	Focus groups	In-operation surprises – patients reported feeling fear or distress if they experience sensations of pain or discomfort during surgery which they did not feel they had been adequately warned about and prepared for beforehand.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Post-operative visits							
Nijkamp 2002	Focus groups	Patient education – Patients reported bring confused by unclear, incomplete and contradictory patient information, and blamed this confusion on the discontinuity of doctors at subsequent visits. Patients reported being worried about short-term compliance with the post-operative regimen and felt that unambiguous guidance about post-operative restrictions would generate reassurance.	Not serious	High[1]	Not serious	Moderate[2]	Moderate
Recovery period at home, from 1 to 5 months after surgery							
Nijkamp 2002	Focus groups	Patient information – Visual acuity deteriorated for some patients over the recovery period, and if they were not	Not serious	High[1]	Not serious	Moderate[2]	Moderate

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
		properly informed, some patient worried about this regression					

[1] Study conducted in 2006 in the Netherlands, but it was agreed that patient information needs are unlikely to be particularly different based on the different setting on time period.

[2] 27 people included in study, and data not collected until saturation of themes was achieved.

GRADE Tables

Outcome	Studies	Design	Risk of bias	Inconsistency	Indirectness	Total number of patients	Number of patients	Quality
Desire for information and discussion prior to routine cataract surgery								
Wish to know nothing at all about risks	Tan et al., 2008	Survey	Serious[1]	N/A	Not serious	100	32	Moderate[2]
Wish to only know the overall chance of visual improvement	Tan et al., 2008	Survey	Serious[1]	N/A	Not serious	100	22	Moderate[2]
Wish to discuss possible complications	Tan et al., 2008	Survey	Serious[1]	N/A	Not serious	100	46	Moderate[2]

[1] High risk of bias as assessed by NICE quality checklist

[2] Imprecision was not addressed as only raw proportion data were reported

Outcome	Studies	Design	Risk of bias	Inconsistency	Indirectness	Total number of patients	Quality
What patients want to know before they have cataract surgery							
Chances of visual improvement after surgery; when the vision would improve; the overall risk of losing vision from the surgery; the consequences of not having the operation and the types of serious complications	Elder & Suter, 2004	Questionnaire	Serious[1]	N/A	Not serious	190	Moderate[2]

[1] Low risk of bias as assessed by NICE quality checklist

Outcome	Studies	Design	Risk of bias	Inconsistency	Indirectness	Total number of patients	Quality
[2] Imprecision was not addressed as only raw proportion data were reported							

G.2 Indicators for referral

- What are the indicators for referral for cataract surgery?
- What are the optimal clinical thresholds in terms of severity and impairment for referral for cataract surgery?

G.2.1 What are the indicators for referral for cataract surgery?

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Visual acuity (LogMAR means) – change from preoperative to 1 year post-surgery (crucial/appropriate versus uncertain/inappropriate)								
1 Choi 2009	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	222	MD 0.48 (0.35, 0.60)	Moderate
Visual acuity (Snellen chart - percentage) improvement >4 months postoperatively (crucial/appropriate versus uncertain/inappropriate)								
1 Tobacman 2003	Retrospective cohort	Serious[1]	N/A	Not serious	Serious[4]	768	RR 1.30 (1.07, 1.59)	Low
Visual acuity (means) – change from preoperative to 6 weeks post-surgery (high versus low priority)								
1 Gutierrez 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	4,336	MD 0.22 (0.22, 0.24)	High
Visual acuity (Decimal means) – change from preoperative to 6 weeks post-surgery (necessary/appropriate versus uncertain/inappropriate)								
1 Quintana 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	3,126	MD 0.13 (0.11, 0.15)	High
Visual Acuity: Minimal Clinical Importance Difference - Decimal (percentage) - change from preoperative to 6 weeks post-surgery (necessary/appropriate versus uncertain/inappropriate)								
1 Quintan	Prospective cohort	Not serious	N/A	Not serious	Not serious	3,126	RR 1.40 (1.29, 1.52)	High

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
a 2009								
Visual Function VF-14 (means) - change from preoperative to 6 weeks post-surgery (high versus low priority)								
1 Gutierrez 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	4,336	MD 9.07 (6.49 to 11.65)	High
Visual Function VF-14 (means) - change from preoperative to 1 year post-surgery (crucial/appropriate versus uncertain/inappropriate)								
1 Choi 2009	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	222	MD 18.72 (12.21, 25.23)	Moderate
Visual Function VF-14 (means) – change from preoperative to 3 months post-surgery (necessary/appropriate versus uncertain/inappropriate)								
1 Quintana 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	3,126	MD 10.03 (8.27, 11.78)	High
Visual Function VF-14: Minimal Clinical Importance Difference (percentage) - change from preoperative to 3 months post-surgery (necessary/appropriate versus uncertain/inappropriate)								
1 Quintana 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	3,126	RR 1.44 (1.32, 1.56)	High
Satisfaction with vision change from preoperative to 1 year post-surgery (crucial/appropriate versus uncertain/inappropriate)								
1 Choi 2009	Retrospective cohort	Serious[1]	N/A	Not serious	Serious[3]	222	MD 5.87 (-1.68, 13.42)	Low
Self-reported pre-surgery vision worse than thought for people with baseline VF-14 of 100								
1 Bellan 2005	Prospective cohort	Serious[2]	N/A	Not serious	Not serious	105	72.6% (62.8%, 80.9%)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Willingness to repeat sugery for people with baseline VF-14 of 100								
1 Bellan 2005	Prospective cohort	Serious[2]	N/A	Not serious	Not serious	105	94.3% (88.0%, 97.9%)	Moderate

[1] Retrospective study – downgrade 1 level
[2] No report of randomisation method - downgrade 1 level
[3] 95%CI crosses the line of no effect, downgrade 1 level.
[4] 95% CI crosses 1 defined MID

G.2.2 5 What are the optimal clinical thresholds in terms of severity and impairment for referral for cataract surgery?

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Visual acuity - Snellen (means) – change from preoperative to 6 weeks post-surgery (baseline visual acuity >0.5 vs <0.1)								
1 Bilbao 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	4,356	MD -0.27 (-0.29, -0.25)	High
Odds ratio of visual acuity (LogMAR) improvement from satisfying visual acuity criteria for surgery								
1 Kuoppala 2012	Prospective cohort	Serious[3]	N/A	Not serious	Serious[6]	93	OR 3.68 (1.12, 12.1)	Low
Proportion of people with improved visual acuity (LogMAR) post-surgery (≥20/40 pre-operatively versus <20/40 pre-operatively)								
1 Kessel (2016) – contains 3 studies	Meta-analysis	Serious[3]	Serious[5]	Not serious	Serious[6]	368,644	RR 0.85 (0.64, 1.13)	Very low
Mean improvement index 2-3 months post-surgery (VA group 1 versus VA group 3) - LogMAR								
1 Monestam 1999	Prospective cohort	Serious[3]	N/A	Not serious	Serious[4]	453	MD 0.40 (-0.25, 1.05)	Low
Visual Function VF-14 (means) – change from preoperative to 3 months post-surgery (baseline visual acuity >0.5 vs <0.1)								

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
1 Bilbao 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	4,356	MD -8.04 (-10.04, -6.04)	High
Proportion of people with improved visual function post-surgery (≥20/40 pre-operatively versus <20/40 pre-operatively)								
1 Kessel (2016) – contains 2 studies	Meta-analysis	Serious[3]	Serious[5]	Not serious	Not serious	5,569	RR 1.00 (0.94 to 1.06)	Low
Odds ratio of visual function improvement from satisfying visual function criteria for surgery								
1 Kuoppala 2012	Prospective cohort	Serious[3]	N/A	Not serious	Not serious	93	OR 153 (18.1 to 1297)	Moderate
Proportion of people describing results of operation as very good or excellent (pre-op VF-14 <94.5 versus ≥94.5)								
1 Black 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	745	RR 0.93 (0.85 to 1.01)	Moderate
Proportion of people describing results of operation as very good or excellent (pre-op VF-14 <87.8 versus ≥87.8)								
1 Black 2009	Prospective cohort	Not serious	N/A	Not serious	Not serious	745	RR 0.91 (0.84 to 0.98)	High

[1] Retrospective study – downgrade 1 level
[2] Case-control study – downgrade 2 levels
[3] No report of randomisation method - downgrade 1 level
[4] 95%CI crosses the line of no effect, downgrade 1 level
[5] I^2 >75%, downgrade 1 level
[6] 95% CI crosses 1 defined MID

6

G.3 Pre-operative assessment and biometry

- What is the effectiveness of different techniques for undertaking biometry?
- What are the most appropriate formulae to optimise intraocular lens biometry calculation?
- What is the effectiveness of strategies used to select intraocular lens constants in order to optimise biometry calculation?
- What other factors should be considered such as, who should undertake biometry and when should preoperative biometry be assessed?
- What is the effectiveness of risk stratification techniques to reduce surgical complications?
- What are the risk factors associated with increased surgical complications in cataract surgery?

G.3.1 Biometry techniques

G.3.1.1 Ultrasound (immersion and contact) and optical biometry to measure axial length

Number of randomised controlled trials (RCTs)	Quality assessment				Number of eyes		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Ultrasound biometry	Optical biometry	Absolute (95% CI)	
Absolute prediction error (follow-up up to 2 months; Better indicated by lower values)								
5 (Fontes 2011, Kolega 2015, Naicker 2015, Rajan 2002, Raymond 2009)	Serious[1]	Not serious	Serious[2]	Not serious	325	304	MD 0.05 (-0.01, 0.11)	Low
Absolute prediction error - Immersion ultrasound biometry (follow-up up to 2 months; Better indicated by lower values)								
2 (Fontes 2011, Naicker 2015)	Serious[1]	Serious[3]	Serious[2]	Not serious	170	150	MD 0.03 (-0.09, 0.16)	Very low
Absolute prediction error - Contact ultrasound biometry (follow-up up to 2 months; Better indicated by lower values)								
3 (Kolega 2015, Rajan 2002, Raymond 2009)	Serious[1]	Not serious	Serious[2]	Not serious	155	154	MD 0.08 (-0.01, 0.17)	Low
Proportion of eyes within range of absolute prediction error - Less than 0.5 dioptres (follow-up up to 2 months)								
5 (Fontes 2011, Kolega 2015, Naicker 2015, Rajan 2002, Raymond 2009)	Serious[1]	Not serious	Serious[2]	Not serious	221/325 (68%)	216/299 (72.2%)	RR 0.93 (0.82, 1.05)	Low
Proportion of eyes within range of absolute prediction error - Less than 1.0 dioptre (follow-up up to 2 months)								
5 (Fontes 2011, Kolega 2015, Naicker 2015, Rajan 2002, Raymond 2009)	Serious[1]	Not serious	Serious[2]	Not serious	294/325 (90.5%)	278/299 (93%)	RR 0.97 (0.93, 1.01)	Low
Proportion of eyes within range of absolute prediction error - Less than 1.5 dioptres (follow-up up to 2 months)								
4 (Fontes 2011, Naicker 2015, Rajan 2002, Raymond 2009)	Serious[1]	Not serious	Serious[2]	Not serious	301/305 (98.7%)	273/279 (97.1%)	RR 1.01 (0.99, 1.03)	Low
Proportion of eyes within range of absolute prediction error - Less than 2.0 dioptres (follow-up up to 2 months)								
4 (Fontes 2011, Naicker 2015, Rajan 2002, Raymond 2009)	Serious[1]	Not serious	Serious[2]	Not serious	305/305 (100%)	279/279 (100%)	RR 1.00 (0.99, 1.01)	Low

Number of randomised controlled trials (RCTs)	Quality assessment				Number of eyes		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Ultrasound biometry	Optical biometry	Absolute (95% CI)	

[1] Studies were of variable quality but generally provided limited details on specific methods including randomisation, blinding, missing data and how post-operative refraction was assessed i.e. using subjective or objective measures.
[2] The guideline committee agreed that ultrasound biometry undertaken by 1 experienced practitioner in the RCTs was not reflective of routine NHS clinical practice where expertise is considerably less and variable.
[3] Heterogeneity was observed between the studies ($I^2 \geq 50\%$).
[MD]mean difference; [RR]relative risk

G.3.1.216 Keratometry (manual and automated) and topography to measure corneal curvature

Number of randomised controlled trials (RCTs)	Quality assessment				Number of people		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Standard keratometry	Topography	Absolute (95% CI)	
Absolute prediction error (follow-up 3 months; Better indicated by lower values)								
1 (Antcliff 1995)	Serious[1]	N/A	Serious[2]	Serious[3]	23	23	MD 0.25 (-0.12, 0.62)	Very low
Proportion of eyes within range of absolute prediction error - Less than 0.5 dioptres (follow-up 3 months)								
1 (Antcliff 1995)	Serious[1]	N/A	Serious[2]	Not serious	8/23 (34.8%)	16/23 (69.6%)	RR 0.5 (0.27, 0.93)	Low

[1] Study had high risk of bias due to sample size and generally poor reporting on specific methods including randomisation, blinding, missing data, measurement procedures and how post-operative refraction was assessed i.e. using subjective or objective measures.
[2] Study was conducted in 1995 such that standard keratometry procedures have progressed.
[3] Confidence intervals cross the line of minimal important difference of 0.5 dioptres.
[MD]mean difference; [RR]relative risk

G.3.1.317 Observational studies in people undergoing phacoemulsification cataract surgery with a history of corneal refractive surgery

18 Studies including mixed populations of individuals with a history of different types of refractive surgery (laser-assisted in situ
19 keratomileusis, photorefractive keratectomy and radial keratotomy) for various indications (myopia, hyperopia)

Number of retrospective case series	Quality assessment				Number of people		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Automated keratometry (SRK-T formula)	Topography (Pentacam or TMS; SRK-T formula)	Absolute (95% CI)	
Prediction error (follow-up not reported; Better indicated by lower values)								
1 (Canto 2013)	Very serious[1]	N/A	Not serious	Serious[2]	46	46	MD 0.43 (-0.33, 1.19)	Very low
Absolute prediction error (follow-up not reported; Better indicated by lower values)								

Number of retrospective case series	Quality assessment				Number of people		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Automated keratometry (SRK-T formula)	Topography (Pentacam or TMS; SRK-T formula)	Absolute (95% CI)	
1 (Canto 2013)	Very serious[1]	N/A	Not serious	Serious[2]	46	46	MD -0.17 (-0.75, 0.41)	Very low

[1] Study had a high risk of bias, due to lack of details on measurement procedures, how the intraocular lens power was selected at surgery and methods for assessing post-operative refraction; retrospective nature meant that practice may have changed over time; mixed population of different types of refractive surgeries for various indications would likely introduce confounding. Overall the outcomes were downgraded 3 levels, due to study design and risks of bias.

[2] Confidence intervals cross the line of minimal important difference of 0.5 dioptres.

[MD]mean difference

20 **Studies including individuals with a history of laser-assisted in situ keratomileusis and photorefractive keratectomy for myopia**

Number of retrospective case series	Quality assessment				Number of people		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Automated keratometry (SRK-T formula)	Topography (Pentacam true net corneal power; SRK-T formula)	Absolute (95% CI)	
Prediction error (follow-up up to 2 months; Better indicated by lower values)								
1 (Kim 2013)	Very serious[1]	N/A	Not serious	Not serious	47	47	MD 1.34 (0.71, 1.97)	Very low
Proportion of eyes within range of absolute prediction error - Less than 0.5 dioptres (follow-up up to 2 months)								
1 (Kim 2013)	Very serious[1]	N/A	Not serious	Not serious	5/47 (10.6%)	15/47 (31.9%)	RR 0.33 (0.13, 0.84)	Very low
Proportion of eyes within range of absolute prediction error - Less than 1.0 dioptre (follow-up up to 2 months)								
1 (Kim 2013)	Very serious[1]	N/A	Not serious	Not serious	16/47 (34%)	18/47 (38.3%)	RR 0.89 (0.52, 1.52)	Very low
Proportion of eyes within range of absolute prediction error - Less than 1.5 dioptres (follow-up up to 2 months)								
1 (Kim 2013)	Very serious[1]	N/A	Not serious	Not serious	30/47 (63.8%)	32/47 (68.1%)	RR 0.94 (0.70, 1.25)	Very low
Proportion of eyes within range of absolute prediction error - Less than 2.0 dioptres (follow-up up to 2 months)								
1 (Kim 2013)	Very serious[1]	N/A	Not serious	Not serious	31/47 (66%)	41/47 (87.2%)	RR 0.76 (0.60, 0.95)	Very low

[1] Study had high risk of bias due to the use of unstandardized biometry measurements between keratometry and Pentacam topography groups, unclear intraocular lens (IOL) constant optimisation, lack of details on how the IOL power was selected at surgery and methods for assessing post-operative refraction; retrospective nature meant that practice may have changed over time. Overall the outcomes were downgraded 3 levels, due to study design and risks of bias.

[MD]mean difference; [RR]relative risk

G.3.221 Intraocular lens formulas

G.3.2.122 Virgin eyes without a history of corneal refractive surgery

23 Axial length <22.00mm

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	7	388	Very serious[1]	Not serious	Not serious	Not serious	Low
Within 0.25D	5	1,017	Not serious	Not serious	Not serious	Serious[3]	Moderate
Within 0.5D	11	1,281	Not serious	Serious[2]	Not serious	Serious[3]	Low
Within 1.0D	11	1,281	Not serious	Not serious	Not serious	Serious[3]	Moderate
Within 2.0D	3	216	Very serious[1]	Not serious	Not serious	Serious[3]	Very low

[1] Included studies were generally small, retrospective case series with poor reporting of methods, unclear details of calculations of implant IOL power.
[2] Tau>0.5
[3] No clear pattern evident from available results

24 Axial length 22.00-24.50mm

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	2	546	Not serious	N/A	Serious[1]	Not serious	Moderate
Within 0.25D	3	8,969	Not serious	Not serious	Not serious	Not serious	High
Within 0.5D	4	9,391	Not serious	Not serious	Not serious	Not serious	High
Within 1.0D	4	9,391	Not serious	Not serious	Not serious	Not serious	High
Within 2.0D	2	3,060	Not serious	Not serious	Not serious	Serious[2]	Moderate

[1] Study undertaken in Thailand
[2] No clear pattern evident from available results

25 Axial length 24.50-26.00mm

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	1	24	Very serious[1]	N/A	Not serious	Serious[2]	Very low

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Within 0.25D	3	1,342	Not serious	Not serious	Not serious	Not serious	High
Within 0.5D	4	1,368	Not serious	Not serious	Not serious	Not serious	High
Within 1.0D	6	1,488	Not serious	Not serious	Not serious	Not serious	High
Within 2.0D	1	372	Not serious	N/A	Not serious	Serious[2]	Moderate

[1] Included study was generally small, prospective case series
[2] No clear pattern evident from available results

26 **Axial length >26.00mm**

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	2	107	Serious[1]	N/A	Not serious	Serious[3]	Low
Within 0.25D	2	410	Not serious	Not serious	Not serious	Serious[3]	Moderate
Within 0.5D	5	537	Not serious	Not serious	Not serious	Serious[3]	Moderate
Within 1.0D	8	703	Not serious	Serious[2]	Not serious	Serious[3]	Low
Within 2.0D	2	130	Serious[1]	N/A	Not serious	Serious[3]	Low

[1] Included samples were small
[2] Tau>0.5
[3] No clear pattern evident from available results

G.3.2.27 **Eyes with a history of myopic LASIK/LASEK/PRK**

28 **Historical and no historical data methods**

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	2	65	Very serious[1]	Serious[2]	Not serious	Serious[3]	Very low
Prediction error	5	195	Very serious[1]	Serious[2]	Not serious	Serious[3]	Very low
Within 0.5D	5	195	Very serious[1]	Serious[2]	Not serious	Serious[3]	Very low
Within 1.0D	5	195	Very serious[1]	Serious[2]	Not serious	Serious[3]	Very low

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Within 1.5D	1	47	Very serious[1]	N/A	Not serious	Not serious	Low
Within 2.0D	2	84	Very serious[1]	N/A	Not serious	Serious[3]	Very low

[1] Included studies was generally small, retrospective case series
[2] Tau>0.5
[3] No clear pattern evident from available results

29 **No historical data methods (excluding studies where patient history is part of the formula)**

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Within 0.5D	4	158	Very serious[1]	Serious[2]	Not serious	Serious[4]	Very low
Within 1.0D	4	158	Very serious[1]	Serious[2]	Not serious	Serious[4]	Very low

[1] Included studies was generally small, retrospective case series
[2] Tau>0.5

30 **Historical data methods (excluding studies where patient history is not part of the formula)**

Outcome	No. of studies	Overall sample size per formula	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	2	65	Very serious[1]	Serious[2]	Not serious	Serious[4]	Very low
Within 0.5D	2	65	Very serious[1]	Not serious	Serious[3]	Not serious	Very low
Within 1.0D	2	65	Very serious[1]	Not serious	Serious[3]	Not serious	Very low
Within 2.0D	1	37	Very serious[1]	N/A	Not serious	Serious[4]	Very low

[1] Included studies was generally small, retrospective case series
[2] Tau>0.5
[3] Network connector (SRKT DK uses historical data in one study but no historical data in the other
[4] No clear pattern evident from available results

G.3.331 Intraocular lens constant optimisation

Outcome	No. of studies	Optimised IOLC n	Standard IOLC n	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality

Outcome	No. of studies	Optimised IOLC n	Standard IOLC n	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Mean absolute error	4	562	562	Serious[1]	Not serious	Not serious	Serious[4]	Low
Within 0.25D	3	8,508	8,508	Not serious	Serious[2]	Not serious	Serious[4]	Low
Within 0.5D	6	8,946	8,946	Not serious	Serious[2]	Not serious	Serious[4]	Low
Within 1.0D	7	8,997	8,997	Not serious	Serious[2]	Not serious	Serious[4]	Low
Within 1.5D	1	100	100	Serious[1]	N/A	Serious[3]	Not serious	Low

[1] Included studies were generally small, retrospective case series with poor reporting of methods, unclear details of calculations of implant IOL power and intervention/comparators.
[2] Tau>0.5
[3] Small study conducted in South Korea
[4] No clear pattern evident from available results

G.3.432 Other considerations in biometry

G.3.4.133 Second eye refinement prediction

Number of case series	Quality assessment				Number of people		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Adjusted prediction	Unadjusted prediction	Absolute (95% CI)	
Absolute prediction error (follow-up up to 4 weeks; Better indicated by lower values)								
1 (Covert 2010)	Very serious[1]	N/A	Not serious	Not serious	206	206	MD -0.08 (-0.15, 0.01)	Very low
Proportion of eyes within range of absolute prediction error - Less than 0.5 dioptres (follow-up up to 4 weeks)								
2 (Aristodemou 2011, Covert 2010)	Very serious[2]	Not serious	Not serious	Not serious	1665/2073 (80.3%)	1519/2073 (73.3%)	RR 1.10 (1.06, 1.13)	Low
Proportion of eyes within range of absolute prediction error - Less than 1.0 dioptre (follow-up up to 8 weeks)								
3 (Aristodemou 2011, Covert 2010, Jivrajka 2012)	Very serious[2]	Not serious	Not serious	Not serious	2090/2170 (96.3%)	2056/2170 (94.7%)	RR 1.02 (0.99, 1.06)	Low

[1] This small retrospective case series has a high risk of bias due to inconsistencies between the timing of first and second eye surgeries and post-operative refractive assessment of the first eye.
[2] Studies have a high risk of bias, due to the lack of reporting of baseline characteristics, inconsistencies in numbers reported in the manuscript, limited reporting of biometry and keratometry measurement procedures and details on how the IOL power was selected at surgery and inconsistencies between the timing of first and second eye surgeries and post-operative refractive

Number of case series	Quality assessment				Number of people		Effect	Quality
	Risk of bias	Inconsistency	Indirectness	Imprecision	Adjusted prediction	Unadjusted prediction	Absolute (95% CI)	
assessment of the first eye. [MD]mean difference; [RR]relative risk								

G.3.534 Risk stratification

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Cataract Risk score									
Najjar-Awwad risk stratification	1 Blomquist (2010)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	1,833	Odds ratios compared to score <3: >3 - 1.69 (0.23, 12.61) >4 - 1.13 (0.45, 2.84) >5 - 1.16 (0.71, 1.88) >6 - 2.11 (1.42, 3.14) >7 - 1.87 (1.28, 2.72) >8 - 1.61 (1.06, 2.46) >9 - 1.94 (1.18, 3.18) >10 - 2.06 (1.00, 4.24)	Moderate
Risk group score									
Muhtaseb risk stratification	1 Muhtaseb (2004)	Prospective cohort	Not serious	N/A	Not serious	Not serious	1,000	Odds ratios compared to score of 0: 1-2 - 1.78 (0.96, 3.30) 3-5 - 3.45 (1.84, 6.47) >5 - 10.43 (4.11, 26.46)	High
Potential complication scores (Muhtaseb)									
Muhtaseb risk stratification	1 Osbourne (2006)	Case-control	Very serious[2]	N/A	Not serious	Not serious	11,913	Odds ratios compared to score of 0: 1 - 1.18 (0.70, 1.97) 2 - 0.88 (0.21, 3.61)	Low

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
								3 - 4.95 (2.56, 9.55) 4 - 14.92 (6.57, 33.90)	
Potential complication scores (Habib)									
Habib risk stratification	1 Osbourne (2006)	Case-control	Very serious[2]	N/A	Not serious	Not serious	11,913	Odds ratios compared to score of 1: 2 - 1.57 (0.92, 2.66) 3 - 2.83 (1.63, 4.91) 4 - 8.96 (3.77, 21.30) 5 - 8.88 (2.09, 37.80)	Low
Posterior capsule ruptures									
Resident surgeon (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Serious[4]	953 patients (1,109 eyes)	OR 2.06 (0.83, 5.14)	Low
Low-volume surgeons (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Very serious[5]	953 patients (1,109 eyes)	OR 1.79 (0.60, 5.33)	Very low
High-volume surgeons (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Very serious[5]	953 patients (1,109 eyes)	OR 0.97 (0.23, 3.99)	Very low
All surgeons (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Serious[4]	953 patients (1,109 eyes)	OR 1.70 (0.91, 3.17)	Low
All adverse events									
Resident surgeon (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Serious[6]	953 patients (1,109 eyes)	OR 2.44 (1.06, 5.65)	Low

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Low-volume surgeons (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Very serious[5]	953 patients (1,109 eyes)	OR 1.48 (0.53, 4.16)	Very low
High-volume surgeons (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Very serious[5]	953 patients (1,109 eyes)	OR 0.97 (0.23, 3.99)	Very low
All surgeons (unstratified versus stratified)	1 Tsinopoulos (2013)	RCT	Serious[3]	N/A	Not serious	Serious[4]	953 patients (1,109 eyes)	OR 1.78 (0.99, 3.19)	Low

[1] Retrospective study – downgrade 1 level
[2] Case-control study – downgrade 2 levels
[3] No report of randomisation method - downgrade 1 level
[4] 95%CI crosses the line of no effect, downgrade 1 level.
[5] 95%CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels.
[6] 95%CI crosses over both appreciable benefit – 1.25, downgrade 1 level.

G.3.635 Risk factors associated with increased surgical complications in cataract surgery

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of cases and controls	Effect size (95% CI)	Quality
Risk of Suprachoroidal haemorrhage									
Intraocular pressure	1 Beatty (1998)	Case-control	Very serious[1]	N/A	Not serious	Serious[2]	Cases (n=33), controls (n=66)	MD 3.43 (-0.31, 7.17)	Very low
Intraocular pressure	1 Ling (2004)	Case-control	Very serious[1]	N/A	Not serious	No serious	Cases (n=109), controls (n=449)	OR 1.09 (1.02, 1.17)	Low
Gluacoma	2 Beatty (1998) and Ling	Case-control	Very serious[1]	Serious[4]	Not serious	Not serious	Cases (n=175), controls (n=515)	OR 1.96 (0.84, 4.60) OR 5.9 (2.9, 11.8)	Very low

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of cases and controls	Effect size (95% CI)	Quality
	(2004)								
Cardiovascular drugs	1 Ling (2004)	Case-control	Very serious[1]	N/A	Not serious	Not serious	Cases (n=109), controls (n=449)	OR 1.66 (1.27, 2.16)	Low
Posterior capsule rupture before haemorrhage	1 Ling (2004)	Case-control	Very serious[1]	N/A	Not serious	Not serious	Cases (n=109), controls (n=449)	OR 3.9 (1.7, 8.9)	Low
Conversion from phaco to ECCE	1 Ling (2004)	Case-control	Very serious[1]	N/A	Not serious	Not serious	Cases (n=109), controls (n=449)	OR 6.4 (2.2, 18.9)	Low
Age	1 Beatty (2004)	Case-control	Very serious[1]	N/A	Not serious	Serious[2]	Cases (n=33), controls (n=66)	MD -0.80 (-5.07, 3.47)	Very low
Previous intraocular surgery	1 Beatty (2004)	Case-control	Very serious[1]	N/A	Not serious	Very serious[3]	Cases (n=33), controls (n=66)	OR 0.65 (0.12, 3.39)	Very low
Axial mean length	1 Beatty (2004)	Case-control	Very serious[1]	N/A	Not serious	Very serious[2]	Cases (n=33), controls (n=66)	MD 0.43 (-0.11, 0.97)	Very low

[1] Case-control study – downgrade 2 levels
[2] 95%CI crosses the line of no effect, downgrade 1 level.
[3] 95%CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels.
[4] I^2 >75%, downgrade 1 levels.

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Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Risk of Floppy Iris Syndrome									
Pre-operative pupil diameter ≤	1 Chen (2010)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	59 (81 eyes)	OR 2.92 (1.06, 8.05)	Moderate

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
6.5mm									
Prophylactic intracameral lidocaine-epinephrine	1 Chen (2010)	Retrospective cohort	Serious[1]	N/A	Not serious	Serious[3]	59 (81 eyes)	OR 1.83 (0.67, 4.96)	Low
Tamsulosin use	1 Chatziralli (2011) – contains 17 studies	Systematic review	Not serious	Serious[2]	Not serious	Not serious	17,588 eyes	OR 672.0 (216.4, 2086.7)	Moderate
Alfuzosin use	1 Chatziralli (2011) - contains 17 studies	Systematic review	Not serious	Not serious	Not serious	Not serious	17,588 eyes	OR 40.7 (3.2, 514.8)	High
Terazosin use	1 Chatziralli (2011) – contains 17 studies	Systematic review	Not serious	Not serious	Not serious	Not serious	17,588 eyes	OR 15.1 (2.8, 81.1)	High
Doxazosin use	1 Chatziralli (2011) – contains 17 studies	Systematic review	Not serious	Serious[2]	Not serious	Not serious	17,588 eyes	OR 24.2 (1.7, 351.7)	Moderate
Hypertension	1 Chatziralli (2011) – contains	Systematic review	Not serious	Not serious	Not serious	Not serious	17,588 eyes	OR 2.2 (1.2, 4.2)	High

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
	17 studies								
Diabetes mellitus	1 Chatziralli (2011) – contains 17 studies	Systematic review	Not serious	Not serious	Not serious	Serious[4]	17,588 eyes	OR 1.3 (0.7, 2.2)	Moderate

[1] Retrospective study – downgrade 1 level
[2] I^2 value >75%, downgrade 1 level.
[3] 95%CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels.
[4] 95%CI crosses the line of no effect, downgrade 1 level.

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Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Risk of Posterior Capsule Rupture, Vitreous loss or both									
Glaucoma	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.30 (1.03, 1.64)	Moderate
Diabetic retinopathy	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.63 (1.24, 2.14)	Moderate
Brunescent / white cataract	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 2.99 (2.32, 3.85)	Moderate
No fundal view / vitreous opacities	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 2.46 (1.70, 3.55)	Moderate
Pseudo exfoliation / phacodones	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 2.92 (2.02, 4.22)	Moderate

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
is									
Axial length ≥ 26.0 mm	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.47 (1.12, 1.94)	Moderate
Doxazosin use	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.51 (1.09, 2.07)	Moderate
Able to lie flat	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.27 (1.11, 1.45)	Moderate
Age 60-69	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Serious[2]	55,567	OR 1.08 (0.80, 1.46)	Low
Age 70-79	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.42 (1.08, 1.86)	Moderate
Age 80-89	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.58 (1.20, 2.08)	Moderate
Age 90+	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 2.37 (1.69, 3.34)	Moderate
Pupil size (small)	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.45 (1.10, 1.91)	Moderate
Surgeon grade Associate specialist	1 Narendran (2009)	Retrospective cohort	Serious[1]	N/A	Not serious	Serious[2]	55,567	OR 0.87 (0.67, 1.12)	Low
Surgeon	1	Retrosp	Serious[1]	N/A	Not serious	Not serious	55,567	OR 0.36 (0.17, 0.76)	Moderate

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
grade Staff grade	Narendran (2009)	ective cohort							
Surgeon grade Fellow	1 Narendran (2009)	Retrosp ective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.65 (1.29, 2.11)	Moderate
Surgeon grade Specialist registrar	1 Narendran (2009)	Retrosp ective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 1.60 (1.38, 1.85)	Moderate
Surgeon grade Senior house officer	1 Narendran (2009)	Retrosp ective cohort	Serious[1]	N/A	Not serious	Not serious	55,567	OR 3.73 (3.09, 4.51)	Moderate

[1] Cross-sectional study design - downgrade 1 level.
[2] 95%CI crosses the line of no effect, downgrade 1 level.

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Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Risk of developing intraoperative complications									
White cataract	2 Briszi (2012) and Artzen (2009)	Retrospecti ve cohort Case-control	Very serious[1]	Not serious	Not serious	Not serious	1,255	OR 3.9 (1.4, 11.2) OR 3.10 (1.21, 7.93)	Low
Brunescent / hard cataract	1 Artzen	Case-	Very serious[1]	N/A	Not serious	Not serious	655	OR 3.6 (1.88, 6.87)	Low

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
	(2009)	control							
Ocular comorbidity	1 Artzen (2009)	Case-control	Very serious[1]	N/A	Not serious	Serious[3]	655	OR 1.34 (0.92, 1.94)	Very low
Corneal pathology	1 Artzen (2009)	Case-control	Very serious[1]	N/A	Not serious	Very serious[4]	655	OR 0.61 (0.17, 2.13)	Very low
Phacodonesis	1 Artzen (2009)	Case-control	Very serious[1]	N/A	Not serious	Not serious	655	OR 15.48 (5.37, 44.63)	Low
Dense nuclear sclerosis	1 Briszi (2012)	Retrospective cohort	Serious[2]	N/A	Not serious	Not serious	600	OR 4.7 (1.9, 11.5)	Moderate
Small pupil (< 6.0 mm)	1 Briszi (2012)	Retrospective cohort	Serious[2]	N/A	Not serious	Very serious[4]	600	OR 1.6 (0.5, 4.7)	Very low
Anterior chamber depth < 2.5 mm	1 Briszi (2012)	Retrospective cohort	Serious[2]	N/A	Not serious	Very serious[4]	600	OR 1.1 (0.1, 8.9)	Very low
Axial length > 26.0 mm	1 Briszi (2012)	Retrospective cohort	Serious[2]	N/A	Not serious	Very serious[4]	600	OR 1.0 (0.1, 7.7)	Very low
Pseudo exfoliation syndrome	1 Briszi (2012)	Retrospective cohort	Serious[2]	N/A	Not serious	Very serious[4]	600	OR 1.9 (0.4, 8.4)	Very low
Posterior synechia	1 Briszi (2012)	Retrospective cohort	Serious[2]	N/A	Not serious	Very serious[4]	600	OR 1.5 (0.2, 11.8)	Very low
Restless patient	1 Briszi	Retrospective cohort	Serious[2]	N/A	Not serious	Serious[3]	600	OR 3.6 (0.8, 16.6)	Low

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
	(2012)								
Worse corrected distance visual acuity (logMAR)	1 Blomquist (2012)	Retrospective case series	Serious[2]	N/A	Not serious	Not serious	2434	OR 1.52 (1.14, 2.03)	Moderate
Prior pars plana vitrectomy	1 Blomquist (2012)	Retrospective case series	Serious[2]	N/A	Not serious	Not serious	2434	OR 1.88 (1.01, 3.51)	Moderate
Dementia	1 Blomquist (2012)	Retrospective case series	Serious[2]	N/A	Not serious	Not serious	2434	OR 3.65 (1.20, 11.17)	Moderate
Zonule dehiscence	1 Blomquist (2012)	Retrospective case series	Serious[2]	N/A	Not serious	Not serious	2434	OR 8.55 (3.92, 18.63)	Moderate
Pre-operative visual acuity (logMAR)	1 Rutar (2009)	Retrospective case series	Serious[2]	N/A	Not serious	Very serious[4]	320 eyes	OR 1.93 (0.55, 6.78)	Very low
Age 50-60	1 Robbie (2009)	Prospective cohort	Not serious	N/A	Not serious	Very serious[4]	1441	OR 1.89 (0.21, 16.92)	Low
Age 60-70	1 Robbie (2009)	Prospective cohort	Not serious	N/A	Not serious	Very serious[4]	1441	OR 1.87 (0.24, 14.57)	Low
Age 70-80	1 Robbie (2009)	Prospective cohort	Not serious	N/A	Not serious	Very serious[4]	1441	OR 2.03 (0.27, 15.35)	Low
Age 80-90	1 Robbie (2009)	Prospective cohort	Not serious	N/A	Not serious	Very serious[4]	1441	OR 1.88 (0.25, 14.33)	Low

Predictor	No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Age >90	1 Robbie (2009)	Prospective cohort	Not serious	N/A	Not serious	Very serious[4]	1441	OR 1.65 (0.16, 16.59)	Low
Preoperative Visual Acuity ≥1 vs ≤0.3	1 Gonzalez (2014)	Prospective cohort	Not serious	N/A	Not serious	Not serious	4335	OR 1.54 (1.02, 2.31)	High
Preoperative Visual Acuity 0.4-0.9 vs ≤0.3	1 Gonzalez (2014)	Prospective cohort	Not serious	N/A	Not serious	Serious[3]	4335	OR 1.27 (0.88, 1.84)	Moderate

[1] Case-control study – downgrade 2 levels
[2] Retrospective study – downgrade 1 level
[3] 95%CI crosses the line of no effect, downgrade 1 level.
[4] 95%CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels.

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G.4 Intraocular lens selection

- Are different lens design (aspheric vs. spheric, plate vs. loop) effective in improving postoperative vision (refractive outcomes, optical aberrations) in cataract surgery?
- Are different lens design (square-edged vs. round-edge, plate vs. loop) and material (hydrophilic acrylic, hydrophobic acrylic, collagen, hydroxyethyl methacrylate-based vs. silicone-based) effective in preventing posterior capsule opacification in cataract surgery?
- Are tinted lenses effective in preventing the progression of age-related macular degeneration compared with colourless lenses in cataract surgery?
- What is the optimal strategy to facilitate simultaneous distance and near vision following cataract surgery?
- What is the optimal strategy to address pre-existing astigmatism in people undergoing cataract surgery?

G.4.1 Lens design

G.4.1.1 PMMA versus silicone

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
PCO score* (lower numbers favour PMMA)							
3 (Hollick 2000, Wang 2000, Yoshida 2002)	Not serious	Serious[1]	Not serious	Serious[2]	153 eyes	MD 8.29 (-7.60, 24.17)	Low
Nd:YAG capsulotomy rate (lower numbers favour PMMA) – eyes without uveitis							
6 (Dick 1997, Hayashi 1998, Hollick 1999, Hollick 2010, Olson 1998, Wang 2000)	Not serious	Not serious	Not serious	Very serious[3]	428 eyes	RR 1.89 (0.70, 5.07)	Low
Nd:YAG capsulotomy rate (lower numbers favour PMMA) – eyes with uveitis							
1 (Papaliodis 2002)	Not serious	N/A	Not serious	Very serious[3]	22 eyes	RR 0.83 (0.36, 1.90)	Low
Nd:YAG capsulotomy rate (lower numbers favour PMMA) – all eyes							
7 (Dick 1997, Hayashi 1998, Hollick 1999, Hollick 2010, Olson	Not serious	Not serious	Not serious	Very serious[3]	450 eyes	RR 1.56 (0.71, 3.43)	Low

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
1998, Papaliodis 2002, Wang 2000)							

*All data have been converted to a 0-100 scale
[1] i2 value > 75%
[2] Non-significant result
[3] Crosses 2 lines of a defined MID

G.4.1.251 PMMA versus hydrophilic acrylic

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
Proportion of people with UCDVA ≥ 6/9 (lower numbers favour hydrophilic acrylic)							
1 (Hennig 2014)	Serious[1]	N/A	Not serious	Not serious	996 eyes	RR 1.07 (0.94, 1.22)	Moderate
Proportion of people with BCDVA ≥ 6/9 (lower numbers favour hydrophilic acrylic)							
1 (Hennig 2014)	Serious[1]	N/A	Not serious	Not serious	996 eyes	RR 1.00 (0.97, 1.04)	Moderate
PCO score* (lower numbers favour PMMA)							
1 (Hollick 2000)	Not serious	N/A	Not serious	Serious[2]	53 eyes	MD -17.00 (-32.06, -1.94)	Moderate
Nd:YAG capsulotomy rate (lower numbers favour PMMA)							
1 (Hennig 2014)	Serious[1]	N/A	Not serious	Not serious	996 eyes	RR 1.55 (1.25, 1.92)	Moderate

*All data have been converted to a 0-100 scale
[1] Study methods unclearly reported
[2] Non-significant result

G.4.1.352 PMMA versus hydrophobic acrylic

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
BCDVA – logMAR (lower numbers favour PMMA)							
1 (Kobayashi 2000)	Not serious	N/A	Not serious	Serious[1]	909 eyes	MD 0.02 (-0.02, 0.07)	Moderate
Nd:YAG capsulotomy rate (lower numbers favour PMMA) – eyes without uveitis							
2 (Hollick 1999, Kobayashi 2000)	Not serious	Not serious	Not serious	Not serious	921 eyes	RR 5.43 (3.82, 7.72)	High
Nd:YAG capsulotomy rate (lower numbers favour PMMA) – eyes with uveitis							
1 (Papaliodis 2002)	Not serious	N/A	Not serious	Very serious[2]	23 eyes	RR 1.54 (0.50, 4.69)	Low

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
Nd:YAG capsulotomy rate (lower numbers favour PMMA) – all eyes							
3 (Hollick 1999, Kobayashi 2000, Papaliodis 2002)	Not serious	Not serious	Not serious	Not serious	944 eyes	RR 3.77 (1.40, 10.17)	High

*All data have been converted to a 0-100 scale

[1] Non-significant result

[2] Crosses 2 lines of a defined MID

G.4.1.453 Hydrophobic acrylic versus silicone

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
BCDVA – decimal acuity (higher numbers favour hydrophobic acrylic)							
4 (Hayashi 2007, Rabsilber 2006, Vock 2009, Zemaitiene 2011)	Not serious	Not serious	Not serious	Serious[2]	318 eyes	MD -0.04 (-0.09, 0.02)	Moderate
PCO score* (lower numbers favour hydrophobic acrylic)							
8 (Findl 2005, Hayashi 2007, Kohnen 2008, Mester 2004, Rabsilber 2006, Yoshida 2002, Zemaitiene 2004, Zemaitiene 2011)	Not serious	Serious[1]	Not serious	Serious[2]	1,088 eyes	MD 0.18 (-0.16, 0.53)	Low
Nd:YAG capsulotomy rate (lower numbers favour hydrophobic acrylic) – eyes without uveitis							
8 (Findl 2005, Hayashi 2007, Hollick 1999, Kohnen 2008, Mester 2004, Rabsilber 2006, Vock 2009,	Not serious	Not serious	Not serious	Serious[4]	832 eyes	RR 1.66 (0.87, 3.17)	Moderate

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
Zemaitiene 2011)							
Nd:YAG capsulotomy rate (lower numbers favour hydrophobic acrylic) – eyes with uveitis							
2 (Alio 2002, Papaliodis 2002)	Not serious	Not serious	Not serious	Very serious[3]	111 eyes	RR 0.57 (0.22, 1.48)	Low
Nd:YAG capsulotomy rate (lower numbers favour hydrophobic acrylic) – all eyes							
10 (Alio 2002, Findl 2005, Hayashi 2007, Hollick 1999, Kohnen 2008, Mester 2004, Papaliodis 2002, Rabsilber 2006, Vock 2009, Zemaitiene 2011)	Not serious	Not serious	Not serious	Very serious[3]	943 eyes	RR 1.25 (0.74, 2.11)	Low
Lens decentration – mm (lower numbers favour hydrophobic acrylic)							
2 (Baumeister 2005, Hayashi 1997)	Not serious	Not serious	Not serious	Serious[2]	207 eyes	MD -0.01 (-0.06, 0.05)	Moderate
Lens tilt – degrees (lower numbers favour hydrophobic acrylic)							
2 (Baumeister 2005, Hayashi 1997)	Not serious	Not serious	Not serious	Serious[2]	207 eyes	MD 0.13 (-0.31, 0.57)	Moderate

*All data have been converted to a 0-100 scale
[1] i2 value > 75%
[2] Non-significant result
[3] Crosses 2 lines of a defined MID
[4] Crosses 1 line of a defined MID

G.4.1.54 Hydrophobic acrylic versus hydrophilic acrylic

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
BCDVA – logMAR (lower numbers favour hydrophobic acrylic)							
1 (Kugelberg 2008)	Not serious	N/A	Not serious	Not serious	115 eyes	MD -0.07 (-0.11, -0.02)	High

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
BCDVA – decimal acuity (higher numbers favour hydrophobic acrylic)							
2 (Hancox 2007, Heatley 2005)	Not serious	Not serious	Not serious	Not serious	144 eyes	MD 0.08 (0.04, 0.12)	High
PCO score* – logMAR (lower numbers favour hydrophobic acrylic)							
1 (Hancox 2007)	Not serious	N/A	Not serious	Not serious	52 eyes	MD -94.20 (-102.28, -86.12)	High
Nd:YAG capsulotomy rate (lower numbers favour hydrophobic acrylic) – all eyes							
6 (Hancox 2007, Hayashi 2001, Heatley 2005, Kugelberg 2006, Kugelberg 2008, Vasavada 2011)	Not serious	Not serious	Not serious	Not serious	685 eyes	RR 0.22 (0.07, 0.70)	High
Lens decentration – mm (lower numbers favour hydrophobic acrylic)							
1 (Hayashi 2001)	Not serious	Not serious	Not serious	Serious[2]	186 eyes	MD 0.03 (-0.01, 0.07)	Moderate
Lens tilt – degrees (lower numbers favour hydrophobic acrylic)							
1 (Hayashi 2001)	Not serious	Not serious	Not serious	Serious[2]	186 eyes	MD -0.03 (-0.46, 0.40)	Moderate
Glistenings							
1 (Chang 2015)	Not serious	Not serious	Not serious	Very serious[5]	78 eyes	Significantly higher for hydrophobic acrylic lenses	Low

*All data have been converted to a 0-100 scale
[1] i2 value > 75%
[2] Non-significant result
[3] Crosses 2 lines of a defined MID
[4] Crosses 1 line of a defined MID
[5] No measures of uncertainty reported

G.4.1.655 Network meta-analyses (lens material)

Quality assessment						No of eyes	Effect estimate	Quality
No of studies	Design	Risk of bias	Indirectness	Inconsistency	Imprecision		Summary of results	

Quality assessment						No of eyes	Effect estimate	Quality
No of studies	Design	Risk of bias	Indirectness	Inconsistency	Imprecision		Summary of results	
PCO score*								
11 (Findl 2005, Hancox 2007, Hayashi 2007, Hollick 2000, Kohnen 2008, Mester 2004, Rabsilber 2006, Wang 2000, Yoshida 2002, Zemaitiene 2004, Zemaitiene 2011)	RCT	Not serious	Not serious	Serious[1]	Not serious	1,258	See Appendix H	Moderate
PCO score* - excluding hydrophilic acrylic								
10 (Findl 2005, Hayashi 2007, Hollick 2000, Kohnen 2008, Mester 2004, Rabsilber 2006, Wang 2000, Yoshida 2002, Zemaitiene 2004, Zemaitiene 2011)	RCT	Not serious	Not serious	Serious[1]	Not serious	1,181	See Appendix H	Moderate
Nd:YAG capsulotomy rate								
21 (Dick 1997, Findl 2005, Hancox 2007, Hayashi 1998, Hayashi 2001, Hayashi 2007, Heatley 2005, Hennig 2014, Hollick 1999, Hollick 2000, Kobayashi 2000, Kohnen 2008, Kugelberg 2006, Kugelberg 2008, Mester 2004, Olsen 1998, Rabsilber 2006, Vasavada 2011, Vock 2009, Wang 2000, Zemaitiene 2011)	RCT	Not serious	Not serious	Serious[1]	Not serious	3,798	See Appendix H	Moderate

*All data have been converted to a 0-100 scale

[1] i^2>50%.

G.4.1.756 Square-edge versus round-edge

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
BCDVA – decimal acuity (higher numbers favour square-edge)							
5 (Buehl 2004,	Not serious	Not serious	Not serious	Serious[2]	460 eyes	MD 0.06 (-0.01, 0.13)	Moderate

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
Buehl 2005, Findl 2005, Hayashi 2005, Sundelin 2005)							
PCO score* (lower numbers favour square-edge)							
11 (Buehl 2002, Buehl 2004, Findl 2005, Hayashi 2005, Kohnen 2008, Mester 2004, Sacu 2004, Sacu 2005, Shah 2007, Sundelin 2005, Zemaitiene 2004)	Not serious	Serious[1]	Not serious	Not serious	1,251 eyes	MD -6.27 (-8.08, -4.46)	Moderate
Nd:YAG capsulotomy rate (lower numbers favour square-edge)							
9 (Buehl 2005, Buehl 2007, Findl 2005, , Hayashi 2005, Kohnen 2008, Mester 2004, Sacu 2005, Shah 2007, Sundelin 2005)	Not serious	Not serious	Not serious	Not serious	1,032 eyes	RR 0.30 (0.16, 0.56)	High
Lens decentration – mm (lower numbers favour square-edge)							
1 (Baumeister 2005)	Not serious	N/A	Not serious	Serious[2]	50 eyes	MD 0.01 (-0.06, 0.08)	Moderate
Lens tilt – degrees (lower numbers favour square-edge)							
1 (Baumeister 2005)	Not serious	N/A	Not serious	Serious[2]	50 eyes	MD -0.23 (-1.19, 0.73)	Moderate

*All data have been converted to a 0-100 scale

[1] i2 value > 75%

[2] Non-significant result

G.4.1.857 Loop versus 3-piece

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
UCDVA – logMAR (lower numbers favour loop)							
2 (Findl 2015, Prinz 2012)	Not serious	Not serious	Not serious	Serious[2]	173 eyes	MD -0.01 (-0.06, 0.04)	Moderate
BCDVA – logMAR (lower numbers favour loop)							
2 (Findl 2015, Prinz 2012)	Not serious	Not serious	Not serious	Serious[2]	173 eyes	MD 0.00 (-0.03, 0.03)	Moderate
BCDVA – decimal acuity (higher numbers favour loop)							
5 (Hancox 2008, Leydolt 2007, Nejima 2004, Nejima 2006, Zemaitiene 2011)	Not serious	Not serious	Not serious	Serious[2]	278 eyes	MD -0.00 (-0.02, 0.02)	Moderate
PCO score* (lower numbers favour loop)							
13 (Bender 2004, Chang 2013, Findl 2015, Hancox 2008, Leydolt 2007, Mylonas 2013, Nejima 2004, Nejima 2006, Prinz 2012, Sacu 2004, Zemaitiene 2004, Zemaitiene 2007, Zemaitiene 2011)	Not serious	Not serious	Not serious	Serious[2]	956 eyes	MD 0.32 (-0.83, 1.46)	Moderate
Nd:YAG capsulotomy rate (lower numbers favour loop)							
10 (Bender 2004, Bilge 2004, Chang 2013, Findl 2015, Leydolt 2007, Mylonas 2013, Prinz 2012, Sacu 2004, Zemaitiene	Not serious	Not serious	Not serious	Very serious[3]	1,212 eyes	RR 0.85 (0.39, 1.83)	Low

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
2007, Zemaitiene 2011)							
Lens decentration – mm (lower numbers favour loop)							
3 (Hayashi 1198, Hayashi 2005, Mutlu 2005)	Not serious	Serious[1]	Not serious	Serious[2]	382 eyes	MD -0.04 (-0.11, 0.02)	Low
Lens tilt – degrees (lower numbers favour loop)							
3 (Hayashi 1198, Hayashi 2005, Mutlu 2005)	Not serious	Not serious	Not serious	Serious[2]	382 eyes	MD 0.06 (-0.14, 0.26)	Moderate
Glistenings							
1 (Chang 2013)	Not serious	N/A	Not serious	Very serious[4]	78 eyes	Significantly higher for 1-piece lenses	Low

*All data have been converted to a 0-100 scale
[1] i2 value > 75%
[2] Non-significant result
[3] Crosses 2 lines of a defined MID
[4] No measures of uncertainty reported

G.4.1.958 Plate versus 3-piece

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
BCDVA – decimal acuity (higher numbers favour plate)							
1 (Prinz 2011)	Not serious	N/A	Not serious	Serious[1]	60 eyes	MD 0.01 (-0.07, 0.09)	Moderate
PCO score* (lower numbers favour loop)							
1 (Prinz 2011)	Not serious	N/A	Not serious	Serious[1]	60 eyes	MD 0.00 (-4.08, 4.08)	Moderate
Nd:YAG capsulotomy rate (lower numbers favour loop)							
1 (Prinz 2011)	Not serious	N/A	Not serious	Very serious[2]	60 eyes	RR 0.50 (0.05, 5.22)	Low
Lens tilt – degrees (lower numbers favour loop)							
1 (Prinz 2011)	Not serious	N/A	Not serious	Serious[1]	60 eyes	MD -0.50 (-1.60, 0.60)	Moderate

*All data have been converted to a 0-100 scale

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality

[1] Non-significant result
[2] Crosses 2 lines of a defined MID

G.4.1.1059 Aspheric versus spheric

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
UCDVA – logMAR (lower numbers favour aspheric)							
4 (Crnej 2014, Santhiago 2010, Tzelikis 2007, Tzelikis 2008)	Not serious	Not serious	Not serious	Serious[3]	240 eyes	MD -0.00 (-0.03, 0.03)	Moderate
BCDVA – logMAR (lower numbers favour aspheric)							
16 Caporossi 2007, Crnej 2014, Denoyer 2007, Espindola 2012, Moorfields 2007, Morales 2011, Nanavaty 2009, Nanavaty 2012, Rocha 2006, SAnthiago 2010, Shentu 2008, Trueb 2009, Tzelikis 2007, Tzelikis 2008, Zeng 2007)	Not serious	Not serious	Not serious	Not serious	1,675 eyes	MD -0.00 (-0.01, 0.00)	High
BCDVA – decimal acuity (higher numbers favour aspheric)							
3 (Chen 2006, Luo 2010, van Gallen 2010)	Not serious	Not serious	Not serious	Serious[3]	360 eyes	MD -0.02 (-0.05, 0.02)	Moderate
Contrast sensitivity – Pelli-Robson test (higher numbers favour aspheric)							
3 (Moorfields 2007, Rocha 2006,	Not serious	Not serious	Not serious	Serious[3]	309 eyes	MD 0.01 (-0.01, 0.02)	Moderate

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
Santhiago 2010)							
Spherical aberrations (lower numbers favour aspheric)							
14 (Baumeister 2009, Caporossi 2007, Cui 2009, Espindola 2012, Jafarinasab 2010, Moorfields 2007, Morales 2011, Nanavaty 2009, Rocha 2006, Santhiago 2010, Takmaz 2009, Tzelikis 2007, Tzelikis 2008, van Gallen 2010)	Serious[1]	Serious[2]	Not serious	Not serious	932 eyes	MD -0.14 (-0.18, -0.09)	Low
Higher-order aberrations (lower numbers favour aspheric)							
9 (Baumeister 2009, Cui 2009, Denoyer 2007, Espindola 2012, Nanavaty 2009, Rocha 2006, Santhiago 2010, Tzelikis 2007, Tzelikis 2008)	Serious[1]	Serious[2]	Not serious	Not serious	511 eyes	MD -0.11 (-0.18, -0.04)	Low
Comatic aberrations (lower numbers favour aspheric)							
6 (Cui 2009, Espindola 2012, Morales 2011, Nanavaty 2009, Rocha 2006, Santhiago 2010)	Serious[1]	Not serious	Not serious	Not serious	407 eyes	MD -0.05 (-0.08, -0.02)	Moderate
Depth of focus (higher numbers favour aspheric)							

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI)	Quality
1 (Nanavaty 2009)	Not serious	N/A	Not serious	Not serious	88 eyes	MD -0.46 (-0.77, -0.15)	High
PCO score* (lower numbers favour aspheric)							
2 (Crnej 2014, Nanavaty 2012)	Not serious	Not serious	Not serious	Serious[3]	121 eyes	MD -1.25 (-3.39, 0.90)	Moderate
Nd:YAG capsulotomy rate (lower numbers favour aspheric)							
1 (Nanavaty 2009)	Not serious	N/A	Not serious	Very serious[4]	94 eyes	RR 0.50 (0.05, 5.33)	Low
VFQ-25 (lower numbers favour aspheric)							
1 (Sandoval 2008)	Not serious	N/A	Not serious	Serious[3]	53 eyes	MD -2.60 (-6.89, 1.69)	Moderate

*All data have been converted to a 0-100 scale

[1] Evidence of selective outcomes reporting

[2] i2 value > 75%

[3] Non-significant result

[4] Crosses 2 lines of a defined MID

G.4.260 Tinted vs colourless lenses

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Effect size (95% CI)	Quality
Sleep efficiency (%)								
Brondsted (2015)	RCT	Serious[1]	N/A	Not serious	Serious[2]	70 eyes	MD 1.22 (-2.31, 4.75)	Low
Subjective sleep quality (PSQI global score)								
Brondsted (2015)	RCT	Serious[1]	N/A	Not serious	Serious[2]	66 eyes	MD -0.69 (-2.43, 1.05)	Low
Post-operative best corrected visual acuity (logMAR)								
8 (Caporossi 2007, Kara-Junior 2011, Mester 2008, Pandita 2007, Rocha 2006, Schmidinger 2008, Vuori 2006, Wang 2010)	RCT	Serious[1]	Serious[4]	Not serious	Serious[2]	563 eyes	MD 0.00 (-0.02, 0.02)	Very low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Effect size (95% CI)	Quality
Post-operative best corrected visual acuity (logMAR) – excluding non-OECD								
4 (Caporossi 2007, Mester 2008, Schmidinger 2008, Vuori 2006)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	271 eyes	MD 0.00 (-0.02, 0.03)	Low
Post-operative overall colour vision – lower numbers favour tinted lenses								
2 (Leibovitch 2006, Vuori 2006)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	56 eyes	SMD 0.15 (-0.37, 0.68)	Low
Post-operative colour vision in the blue light spectrum under photopic light condition (mean total error score) – lower numbers favour tinted lenses								
3 (Mester 2008, Neumair-Ammerer 2010, Wang 2010)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	229 eyes	SMD 0.22 (-0.04, 0.48)	Low
Post-operative colour vision in the blue light spectrum under photopic light condition (mean total error score) – lower numbers favour tinted lenses, excluding non-OECD								
2 (Mester 2008, Neumair-Ammerer 2010)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	150 eyes	SMD 0.12 (-0.20, 0.45)	Low
Post-operative colour vision in the blue light spectrum under mesopic light condition (mean total error score) – lower numbers favour tinted lenses								
3 (Mester 2008, Neumair-Ammerer 2010, Wang 2010)	RCT	Serious[1]	Not serious	Not serious	Not serious	229 eyes	SMD 0.80 (0.28, 1.31)	Moderate
Post-operative colour vision in the blue light spectrum under mesopic light condition (mean total error score) – lower numbers favour tinted lenses, excluding non-OECD								
2 (Mester 2008, Neumair-Ammerer 2010)	RCT	Serious[1]	Not serious	Not serious	Not serious	150 eyes	SMD 0.56 (0.19, 0.93)	Moderate
Colour perception (% pass) - (120 – 180 days post-operatively)								
Marshall (2005)	RCT	Serious[1]	N/A	Not serious	Very serious[3]	297 eyes	OR 2.85 (0.54, 15.06)	Very low
Colour discrimination (mean colour test score) - (5 years post-operatively)								
Kara-Junior (2011)	RCT	Serious[1]	N/A	Not serious	Serious[2]	50 eyes	MD 7.00 (-10.62, 24.62)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Effect size (95% CI)	Quality
Mean Central Macular Thickness – (5 years post-operatively)								
Kara-Junior (2011)	RCT	Serious[1]	N/A	Not serious	Serious[2]	50 eyes	MD 2.00 (-5.67, 9.67)	Low
Health related quality of life (HRQOL) – Composite NEI-VFQ-39 scales								
Espindle (2005)	RCT	Serious[1]	N/A	Not serious	Serious[5]	257 eyes	MD -1.97 (-5.61, 1.67)	Low
Health related quality of life (HRQOL) – SF-12 component scales (physical)								
Espindle (2005)	RCT	Serious[1]	N/A	Not serious	Serious[2]	257 eyes	MD 1.11 (-1.23, 3.45)	Low
Health related quality of life (HRQOL) – SF-12 component scales (mental)								
Espindle (2005)	RCT	Serious[1]	N/A	Not serious	Serious[2]	257 eyes	MD 0.01 (-2.19, 2.21)	Low

[1] No report of randomisation method, and lack of blinding - downgrade 1 level.

[2] 95% CI crosses the line of no effect, downgrade 1 level.

[3] 95% CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels.

[4] I^2 value >75%, downgrade 1 level.

[5] Crosses a defined MID of 2.4 for the NEI-VFQ (Gillespie BW, Musch DC, Niziol LM, et al (2014). Estimating minimally important differences for two vision-specific quality of fife measures. Investigative Ophthalmology & Visual Science, 55(7), 4206-12)

G.4.3 Multifocal vs monofocal intraocular lenses

G.4.3.1 Multifocal versus monofocal

Visual acuity

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Uncorrected distance visual acuity worse than 6/6 (lower values favour multifocal lenses)								
8 (Steinert 1992, elMaghraby 1992, Percival 1993, Rossetti 1994, Haaskjold 1998, Leyland 2002, Sen 2004, Jusufovic 2011)	RCT	Serious[1]	Not serious	Not serious	Not serious	682	RR 0.96 (0.89 to 1.03)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Corrected distance visual acuity worse than 6/6 (lower values favour multifocal lenses)								
8 (Steinert 1992, elMaghraby 1992, Percival 1993, Rossetti 1994, Haaskjold 1998, Leyland 2002, Sen 2004, Kamlesh 2001	RCT	Serious[1]	Not serious	Not serious	Very serious[2]	692	RR 1.02 (0.71 to 1.45)	Very low
Uncorrected near visual acuity worse than J3/J4 or equivalent (lower values favour multifocal lenses)								
8 (elMaghraby 1992, Percival 1993, Rossetti 1994, Haaskjold 1998, Javitt 2000, Leyland 2002, Jusufovic 2011, Ji 2013)	RCT	Serious[1]	Serious[3]	Not serious	Not serious	782	RR 0.20 (0.07, 0.58)	Low
Mean uncorrected distance visual acuity (lower values favour multifocal lenses)								
6 (Leyland 2002, Nijkamp 2004, Palmer 2008, Harman 2008, Peng 2012, Rasp 2012)	RCT	Serious[1]	Not serious	Not serious	Serious[4]	848	MD 0.01 (-0.03, 0.05)	Low
Mean corrected distance visual acuity (lower values favour multifocal lenses)								
6 (Leyland 2002, Nijkamp 2004, Palmer 2008, Harman 2008, Peng 2012, Rasp 2012)	RCT	Serious[1]	Not serious	Not serious	Not serious	848	MD 0.03 (0.01, 0.06)	Moderate
Mean uncorrected intermediate visual acuity (lower values favour multifocal lenses)								
2 (Peng 2012, Maxwell 2017)	RCT	Serious[1]	Not serious	Not serious	Not serious	515	MD -0.07 (-0.12, -0.03)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Mean corrected intermediate visual acuity (lower values favour multifocal lenses)								
2 (Peng 2012, Maxwell 2017)	RCT	Serious[1]	Not serious	Not serious	Not serious	515	MD -0.09 (-0.11, -0.06)	Moderate
Mean uncorrected near visual acuity (lower values favour multifocal lenses)								
6 (Javitt 2000, Leyland 2002, Harman 2008, Peng 2012, Rasp 2012, Maxwell 2017)	RCT	Serious[1]	Serious[3]	Not serious	Not serious	1,142	MD -0.20 (-0.37, -0.04)	Low
Mean corrected near visual acuity (lower values favour multifocal lenses)								
7 (Javitt 2000, Leyland 2002, Palmer 2008, Harman 2008, Peng 2012, Rasp 2012, Maxwell 2017)	RCT	Serious[1]	Serious[3]	Not serious	Serious[4]	1,316	MD -0.08 (-0.20, 0.03)	Very low

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear
[2] 95% CI crosses two lines of MID so downgraded twice
[3] I^2>75%
[4] Non-significant result

64 **Visual function**

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Spectacle dependence – any (lower values favour multifocal lenses)								
11 (Steinert 1992, Percival 1993, Rossetti 1994, Haaskjold 1998, Javitt 2000, Leyland 2002, Cillino 2008, Harman 2008, Zhao	RCT	Serious[1]	Serious[3]	Not serious	Not serious	1,320	RR 0.65 (0.54, 0.78)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
2010, Peng 2012, Maxwell 2017)								
Spectacle dependence – distance (lower values favour multifocal lenses)								
4 (Haaskjold 1998, Javitt 2000, Nijkamp 2004, Peng 2012)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	618	RR 0.71 (0.46, 1.09)	Low
Spectacle dependence – near (lower values favour multifocal lenses)								
6 (Haaskjold 1998, Javitt 2000, Kamlesh 2001, Nijkamp 2004, Palmer 2008, Peng 2012)	RCT	Serious[1]	Serious[3]	Not serious	Not serious	772	RR 0.53 (0.40, 0.71)	Low
Contrast sensitivity – Pelli-Robson test (higher values favour multifocal lenses)								
4 (Harman 2008, Leyland 2002, Rosetti 1994, Sen 2004)	RCT	Serious[1]	Not serious	Not serious	Serious[4]	288	MD -0.09 (-0.26, 0.08)	Low
Visual function – VF-7 and VF-14 (higher values favour multifocal lenses)								
4 (Cillino 2008, Nijkamp 2004, Sen 2004, Zhao 2010)	RCT	Serious[1]	Serious[3]	Not serious	Serious[4]	480	MD 3.09 (-2.77, 8.96)	Very low
Vision-related quality of life (higher values favour multifocal lenses)								
1 (Nijkamp 2004)	RCT	Serious[1]	N/A	Not serious	Serious[4]	137	MD 0.00 (-0.15, 0.15)	Low
Patient satisfaction (higher values favour multifocal lenses)								
6 (Cillion 2008, Nijkamp 2004, Peng 2012, Sen 2004, Steinert 1992, Zhao 2010)	RCT	Serious[1]	Serious[3]	Not serious	Serious[4]	643	SMD 0.26 (-0.21, 0.73)	Very low

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear

[2] 95% CI crosses one line of MID so downgraded once

[3] I^2>75%

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
[4] Non-significant result								

65 **Adverse events**

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Glare (lower values favour multifocal lenses)								
8 (Percival 1993, Rossetti 1994, Haaskjold 1998, Kamlesh 2001, Sen 2004, Cillino 2008, Harman 2008, Maxwell 2017)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	857	RR 1.21 (1.03, 1.43)	Low
Halos (lower values favour multifocal lenses)								
7 (Cillino 2008, Haaskjold 1998, Kamlesh 2001, Maxwell 2017, Percival 1993, Rossetti 1994, Sen 2004, Zhao 2010)	RCT	Serious[1]	Not serious	Not serious	Not serious	975	RR 2.85 (1.71, 4.75)	Moderate
Dysphotopsia (lower values favour multifocal lenses)								
1 (Palmer 2008)	RCT	Serious[1]	N/A	Not serious	Serious[3]	114	RR 1.18 (0.76, 1.82)	Low

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear
[2] 95% CI crosses one line of MID so downgraded once
[3] 95% CI crosses two lines of MID so downgraded twice

G.4.3.266 Multifocal versus monovision

67 Visual acuity

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Mean uncorrected distance visual acuity (lower values favour multifocal lenses)								
1 (Wilkins 2013)	RCT	Serious[1]	N/A	Not serious	Serious[2]	186	MD 0.02 (-0.02, 0.06)	Low
Mean uncorrected intermediate visual acuity (lower values favour multifocal lenses)								
1 (Wilkins 2013)	RCT	Serious[1]	N/A	Not serious	Not serious	181	MD 0.07 (0.04, 0.10)	Moderate
Mean uncorrected near visual acuity (lower values favour multifocal lenses)								
1 (Wilkins 2013)	RCT	Serious[1]	N/A	Not serious	Not serious	186	MD -0.04 (-0.08, -0.00)	Moderate

[1]Masking of patients and outcome assessors difficult in these trials; reporting bias unclear
[2]Non-significant result

68 Visual function

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Spectacle dependence – any (lower values favour multifocal lenses)								
2 (Libiris 2015, Wilkins 2013)	RCT	Serious[1]	Not serious	Not serious	Not serious	262	RR 0.40 (0.30, 0.53)	Moderate
Spectacle dependence – distance (lower values favour multifocal lenses)								
1 (Libiris 2015)	RCT	Serious[1]	N/A	Not serious	Not serious	75	RR 0.40 (0.22, 0.70)	Moderate
Spectacle dependence – near (lower values favour multifocal lenses)								
1 (Libiris 2015)	RCT	Serious[1]	N/A	Not serious	Very serious[2]	75	RR 1.54 (0.27, 8.70)	Very low
Contrast sensitivity – Pelli-Robson test (higher values favour multifocal lenses)								
2 (Libiris 2015, Wilkins 2013)	RCT	Serious[1]	Not serious	Not serious	Not serious	262	MD -0.04 (-0.07, -0.00)	Moderate
Visual function –VF-14 (higher values favour multifocal lenses)								
1 (Libiris 2015)	RCT	Serious[1]	N/A	Not serious	Serious[3]	75	MD -1.47 (-5.51, 2.57)	Low

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
[2] 95% CI crosses two lines of MID so downgraded twice [3] Non-significant result								

69 **Adverse events**

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Glare (lower values favour multifocal lenses)								
1 (Libiris 2015)	RCT	Serious[1]	N/A	Not serious	Serious[2]	187	RR 1.41 (1.14, 1.73)	Low
[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear [2] 95% CI crosses one line of MID so downgraded once								

G.4.3.370 **Refractive vs diffractive multifocal lenses**

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Mean uncorrected distance visual acuity (lower values favour refractive lenses)								
7 (Alio 2011, Chiam 2007, Cillino 2008, Gil 2012, Martinez Palmer 2008, Mester 2007, Rasp 2012)	RCT	Serious[1]	Not serious	Not serious	Not serious	424	MD -0.05 (-0.07, -0.02)	Moderate
Spectacle dependence – any (lower values favour refractive lenses)								
5 (Chiam 2007, Cillion 2008, Gil 2012, Martinez Palmer 2008, Mester 2007)	RCT	Serious[1]	Not serious	Not serious	Not serious	331	RR 3.21 (2.20, 4.68)	Moderate
Halo (lower values favour refractive lenses)								
4 (Chiam 2007, Cillion 2008, Gil 2012, Mester 2007)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	241	RR 1.45 (1.18, 1.79)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Glare (lower values favour refractive lenses)								
4 (Chiam 2007, Cillion 2008, Gil 2012, Mester 2007)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	226	RR 1.32 (1.02, 1.71)	Low

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear

[2] 95% CI crosses one line of MID so downgraded once

G.4.3.471 Trifocal versus bifocal intraocular lenses

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Mean uncorrected distance visual acuity (lower values favour trifocal lenses)								
2 (Gunderson 2016, Jonker 2015)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	50	MD -0.02 (-0.09, 0.05)	Low
Mean corrected distance visual acuity (lower values favour trifocal lenses)								
2 (Gunderson 2016, Jonker 2015)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	50	MD -0.02 (-0.06, 0.03)	Low
Mean uncorrected intermediate visual acuity (lower values favour trifocal lenses)								
1 (Jonker 2015)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	28	MD 0.04 (-0.08, 0.16)	Low
Mean corrected intermediate visual acuity (lower values favour trifocal lenses)								
1 (Jonker 2015)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	28	MD 0.01 (-0.10, 0.12)	Low
Mean uncorrected near visual acuity (lower values favour trifocal lenses)								
1 (Jonker 2015)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	34	MD 0.05 (-0.05, 0.15)	Low
Mean corrected near visual acuity (lower values favour trifocal lenses)								
1 (Jonker	RCT	Serious[1]	Not serious	Not serious	Serious[2]	28	MD 0.02 (-0.06, 0.10)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
2015)								
Spectacle dependence – near (lower values favour trifocal lenses)								
1 (Jonker 2015)	RCT	Serious[1]	Not serious	Not serious	Very serious[3]	28	RR 0.65 (0.18, 2.38)	Very low

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear
[2] CI crosses line of MID so downgraded once
[3] 95% CI crosses two lines of MID so downgraded twice

G.4.3.572 Network meta-analyses

73 Class-level analysis

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Uncorrected distance visual acuity								
7	RCT	Serious[1]	Serious[2]	Not serious	Serious[3]	1,034	See Appendix H	Very low
Uncorrected near visual acuity								
7	RCT	Serious[1]	Serious[2]	Not serious	Not serious	1,015	See Appendix H	Low
Spectacle dependence								
13	RCT	Serious[1]	Serious[2]	Not serious	Not serious	1,262	See Appendix H	Low
Contrast sensitivity – Pelli-Robson test								
6	RCT	Serious[1]	Not serious	Not serious	Not serious	550	See Appendix H	Moderate
Glare								
9	RCT	Serious[1]	Not serious	Not serious	Not serious	731	See Appendix H	Moderate

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear
[2] I^2>50%
[3] Analysis could not differentiate any clinically distinct alternatives

74 **Subdivided analysis**

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Uncorrected distance visual acuity								
13	RCT	Serious[1]	Serious[2]	Not serious	Not serious	1,395	See Appendix H	Low
Uncorrected near visual acuity								
7	RCT	Serious[1]	Serious[2]	Not serious	Not serious	1,009	See Appendix H	Low
Spectacle dependence								
16	RCT	Serious[1]	Serious[2]	Not serious	Not serious	1,466	See Appendix H	Low
Contrast sensitivity – Pelli-Robson test								
5	RCT	Serious[1]	Not serious	Not serious	Not serious	470	See Appendix H	Moderate
Glare								
11	RCT	Serious[1]	Not serious	Not serious	Not serious	845	See Appendix H	Moderate
Halo								
10	RCT	Serious[1]	Not serious	Not serious	Not serious	776	See Appendix H	Moderate

[1] Masking of patients and outcome assessors difficult in these trials; reporting bias unclear
[2] I^2>50%
[3] Analysis could not differentiate any clinically distinct alternatives

G.4.4 75 Optimal strategy to address pre-existing astigmatism

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Effect size (95% CI)	Quality
Mean Visual Acuity (uncorrected distance - logMAR): Toric IOL vs non-toric IOL (lower numbers favour toric lenses)								
3 Kessel (2016) – contains 7 studies, Ernesz (2015), Leon (2015)	Systematic review and RCT	Not serious	Not serious	Not serious	Not serious	773 eyes	MD -0.05 (-0.10, -0.01)	High
Mean Visual Acuity (uncorrected distance – proportion of people worse than 20/25): Toric IOL vs non-toric IOL (lower numbers favour toric lenses)								
1 Kessel (2016) – contains 4 studies	RCT	Not serious	Not serious	Not serious	Not serious	642 eyes	RR 0.60 (0.51, 0.71)	High

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Effect size (95% CI)	Quality
Mean Visual Acuity (corrected distance - logMAR): Toric IOL vs non-toric IOL (lower numbers favour toric lenses)								
2 Emesz (2015), Visser (2014)	RCT	Not serious	Not serious	Not serious	Serious[2]	250 eyes	MD -0.02 (-0.05, 0.01)	Moderate
Mean Visual Acuity (uncorrected distance – decimal acuity): Limbal relaxing incisions vs no limbal relaxing incisions (higher numbers favour limbal relaxing incisions)								
1 Ouchi (2010)	RCT	Not serious	N/A	Not serious	Not serious	189 eyes	MD 0.23 (0.10, 0.36)	High
Mean Visual Acuity (corrected distance – decimal acuity): Limbal relaxing incisions vs no limbal relaxing incisions (higher numbers favour limbal relaxing incisions)								
1 Ouchi (2010)	RCT	Not serious	N/A	Not serious	Serious[2]	189 eyes	MD -0.06 (-0.15, 0.03)	Moderate
Residual astigmatism (Refractive cylinder diopters): Toric IOL vs non-toric IOL (lower numbers favour toric lenses)								
3 Kessel (2016) – contains 7 studies, Leon (2015), Ernesz 2015	Systematic review	Not serious	Serious[1]	Not serious	Not serious	781 eyes	MD -0.75 (-1.46, -0.05)	Moderate
Cylindrical refraction in CDVA: Limbal relaxing incisions vs no limbal relaxing incisions (lower numbers favour limbal relaxing incisions)								
1 Ouchi (2010)	RCT	Not serious	N/A	Not serious	Not serious	189 eyes	MD -0.95 (-1.19, -0.71)	High
Median cylinder dioptres (6 month postoperatively): limbal relaxing incisions vs on-axis incisions (lower numbers favour limbal relaxing incisions)								
1 Kaufmann (2005)	RCT	Not serious	N/A	Not serious	Very serious[3]	71 eyes	Median difference 0.25 (p=0.298)	Low
Spectacle dependence for distance viewing: Toric IOL vs non-toric IOL (lower numbers favour toric lenses)								
1 Kessel (2016) – contains 4 studies	Systematic Review	Not serious	Not serious	Not serious	Serious[4]	659 eyes	RR 0.47 (0.25, 0.90)	Moderate

[1] I^2 value >75%, downgrade 1 level.

[2] 95% CI crosses the line of no effect, downgrade 1 level.

[3] Non-significant result, but only median values and non-parametric test results reported

[4] 95% CI crosses one line of a defined MID, downgrade 1 level.

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G.5 Wrong lens implant errors

- What are the procedural causes of wrong lens implant errors?
- What strategies should be adopted to reduce the risk of wrong lens implant errors?

G.5.1.1 Procedural causes of wrong lens implant error

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Preoperative measurement and calculation - errors in biometry and keratometry							
Kelly 2006 Kelly 2011 Schein 2012 Steeples 2016	Interviews Retrospective report checks	These occur for numerous reasons including the use of incorrect formulas, constants (may be applied inconsistently), and incorrect data entry into calculation programs. Whilst these errors may occur at the point of measurement, they may originate because of procedural errors which occur sometime prior to the measurement taking place.	Serious[1]	High	High	High	Moderate
Patient identification - problems with patient notes							
Kelly 2006 Kelly 2011 Schein 2012 Steeples 2016 Zamir 2012	Interviews Retrospective report checks	Errors in measurement and calculation can proliferate into patient notes, with biometry reports placed in the wrong patient's notes an additional factor. This can result in confusion with regard to IOL selection. Poor document management/filing practice may result in the previous patient's target IOL being used in the following surgery. Transposition of IOL powers from calculation outputs to the patient notes, or confusion over unclear handwriting resulting in error are also cited. This can be a compounding factor with regard to errors of measurement.	Serious[1]	High	High	High	Moderate
Patient identification - problems with surgical lists/whiteboards							
Kelly 2011 Schein 2012 Steeples 2016	Interviews Retrospective report checks	Clinicians report surgical whiteboards may not be updated in time to notify changes to the order of surgical cases, leading to incorrect identification of the patient in theatre and subsequent IOL implant error. Partial updates of lists and boards (e.g. just updating the patient name)	Serious[1]	High	High	High	Moderate

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Zamir 2012		also feature as causative factors					
Patient/provider communication – outcome expectations							
Kelly 2006 Kelly 2011 Schein 2012	Interviews Retrospective report checks	Several instances of differences between patient stated preferences for visual acuity and IOL type and surgical target/IOL used are documented. It is not clear what the root-cause of these errors is in many cases, though some are a result of measurement problems, or errors in the patient's notes or patient identification as detailed above.	Serious[1]	High	High	High	Moderate
Surgical errors – lens selection							
Kelly 2006 Kelly 2011 Schein 2012 Steeples 2016 Zamir 2012	Interviews Retrospective report checks	Although infrequent, occurrences of lenses found to be out of stock during the operation are reported. In other cases confusion between the IOL selection for right and left eyes was transposed, and more generally in cases where more than one lens was present in the theatre there was an increased risk of selecting the wrong one. Labelling of lenses with similar codes may contribute to this confusion. Cases are also reported where surgical complication such as posterior capsular rupture occurs, or when second surgery is required, and the IOL implant subsequently used is the incorrect power.	Serious[1]	High	High	High	Moderate
Barriers to reporting							
Kelly 2006 Kelly 2011 Kelly 2013 Schein 2012 Steeples 2016	Interviews Retrospective report checks	There are structural barriers to causes of wrong lens implantation taking place, including the requirement to report to different agencies and recording on databases with non-mandatory fields and free-text input. There may be cultural factors resulting in underreporting, or it may be that in cases where checklists and time-out practices are not used, there are fewer opportunities to trap errors that have occurred. Reporting of events without causal information is a hindrance to best-practice learning and the avoidance of future errors.	Serious[1]	High	High	High	Moderate

[1] Significant methodological limitations identified in studies (in particular, retrospective note checks are likely to be hampered due to the under-reporting of events)

G.5.1.231 What strategies should be adopted to reduce the risk of wrong lens implant errors?

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Preoperative measurement and calculation - errors in biometry and keratometry							
Kelly 2006 Kelly 2011 Schein 2012 Steeples 2016	Interviews Retrospective report checks	Any data that is transcribed should be subsequently confirmed by a technician or the surgeon, and transcription should be avoided wherever possible by using the original printouts for data input or entirely electronic systems. Measurement should be repeated in circumstances where the axial length diff. >0.3mm between eyes. In circumstances where additional calculations are required, these results should be matched back to the correct patient using 2 identifiers. Best practice guidelines should be followed when making calculations, with key outputs highlighted clearly on any printouts taken into surgery.	Serious[1]	High	High	High	Moderate
Patient identification – problems with patient notes							
Kelly 2006 Kelly 2011 Schein 2012 Steeples 2016 Zamir 2012	Interviews Retrospective report checks	Clinicians report that 2 distinct identifiers should be used to ensure patients are correctly identified (e.g. name, DOB, NHS no. address) with the patient identity confirmed by more than one member of the team. Considerations should be given to using only digital patient records as a means of avoiding paperwork errors such as reports being incorrectly filed in a patient's notes.	Serious[1]	High	High	High	Moderate
Patient identification - problems with surgical lists/whiteboards							
Kelly 2011 Schein 2012 Steeples 2016	Interviews Retrospective report checks	The information contained on surgical whiteboards should be limited to patient & team identification and should not contain any data from biometry printouts or calculation sheets (where the original document should be referred to exclusively). Similarly, the type of IOL used/IOL powers should not be placed on whiteboards to minimise potential errors of transcription or board management.	Serious[1]	High	High	High	Moderate
Patient/provider communication – outcome expectations							

Studies	Study design	Description	Methodological limitations	Relevance	Coherence	Adequacy	Confidence
Kelly 2006 Kelly 2011 Schein 2012	Interviews Retrospective report checks	A surgical plan should be documented in the medical record and contain information on the IOL type and refractive target, in advance of the procedure. Use of a surgical checklist may minimise refractive surprise.	Serious[1]	High	High	High	Moderate
Surgical errors – lens selections							
Kelly 2006 Kelly 2011 Kelly 2013 Schein 2012 Steeples 2016 Zamir 2012	Interviews Retrospective report checks	Surgical checklists are able to reduce errors associated with lens selection. Items on the checklist relating to stock levels, ensuring the correct lens is the only one present in the theatre and that it is present in advance of the procedure starting (and can therefore be verified), should be included, as should a cross checking of lens type and power with the medical record and surgical plan that can be undertaken by the surgeon and the nurse/technician. This verification should be repeated if there is a change in IOL requirement during surgery. Some disadvantages of surgical checklists mentioned are their time requirement, their design may not be a one-size-fits-all, and they may become a box ticking exercise after they have been implemented for a while. The use of surgical “time-out” is often reported as a useful measure as it gives an opportunity for the team to communicate the surgical plan, check that checklists are in place, check that IOL selection is correct, and that all records and printouts used are matched to the patient. There is disagreement, or no detail given, about when the timeout should take place – either immediately before first incision, or before lens insertion.	Serious[1]	High	High	High	Moderate

[1] Significant methodological limitations identified in studies (in particular, retrospective note checks are likely to be hampered due to the under-reporting of events)

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G.6 Surgical timing and technique

- What is the effectiveness of laser-assisted phacoemulsification cataract surgery compared with standard ultrasound phacoemulsification cataract surgery?
- What is the effectiveness of bilateral simultaneous (rapid sequential) cataract surgery compared with unilateral eye surgery?
- What is the appropriate timing of second eye surgery, taking into account issues such as refractive power after first eye surgery?

The GRADE table for laser-assisted cataract surgery below was produced by the Cochrane Eyes and Vision Group. No changes have been made to the methodology used in undertaking that review.

G.6.1 Laser-assisted cataract surgery

Laser assisted cataract surgery versus standard ultrasound phacoemulsification cataract surgery

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of eyes (studies)	Quality of the evidence (GRADE)	Comments
	Risk with standard ultrasound phacoemulsification	Risk with laser assisted cataract surgery				
Intra-operative complications: anterior capsule tear	-	-	-	1,076 (10 RCTs)	⨁⊖⊖⊖ VERY LOW [1,2]	Only 4 events, 2 in each group
Intra-operative complications: posterior capsule tear	-	-	-	1,076 (10 RCTs)	⨁⊖⊖⊖ VERY LOW [1,2]	Only 1 event, in standard group
Corrected distance visual acuity assessed with: logMAR acuity chart (lower scores = better vision, scale from: -0.3 to 1.3) at least one month after surgery	The mean corrected distance visual acuity ranged from 0.038 to -0.03 logMAR units	The mean corrected distance visual acuity in the intervention group was 0.03 logMAR units lower (better vision) (0.05 lower to 0)	-	224 (3 RCTs)	⨁⨁⊖⊖ LOW [1,3]	Follow-up 6 months.
Visual function one month after surgery	See comments					Not reported. No data on patient satisfaction.
Postoperative complications: cystoid macular oedema	20 per 1000	11 per 1000 (4 to 33)	OR 0.58 (0.20 to 1.68)	957 (9	⨁⨁⊖⊖ LOW [1,3]	

Laser assisted cataract surgery versus standard ultrasound phacoemulsification cataract surgery						
				RCTs)		
Postoperative complications: elevated intraocular pressure (1 day to 1 week after surgery)	13 per 1000	8 per 1000 (2 to 33)	OR 0.57 (0.11 to 2.86)	903 (8 RCTs)	⊕⊕⊖⊖ LOW [1,3]	
Total duration of procedure	The mean total duration of procedure in the control group ranged from 6.04 to 10.5 minutes	The mean total duration of procedure in the intervention group was 0.1 minutes more (0.02 fewer to 0.21 more)	-	274 (3 RCTs)	⊕⊕⊖⊖ LOW [1,3]	No information on costs reported in any study
*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).						
[1] Downgraded for risk of bias (-1): studies were poorly reported and largely judged to be at unclear or high risk of bias [2] Downgraded for imprecision (-2): very small number of events [3] Downgraded for imprecision (-1): effect estimate imprecise with 95% confidence intervals including or close to null (no effect)						

G.6.291 Bilateral surgery

G.6.2.192 Bilateral simultaneous versus unilateral cataract surgery

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI) Higher numbers favour DSCS	Quality
Any intraoperative complication							
2 (Sarikkola, Serrano-Aguilar)	Not serious	Not serious	Not serious	Serious[1]	2,613 eyes	RR 0.75 (0.47, 1.21)	Moderate
Any postoperative complication							
2 (Sarikkola, Serrano-Aguilar)	Not serious	Not serious	Not serious	Serious[1]	2,610 eyes	RR 0.77 (0.49, 1.20)	Moderate
Any intra- or postoperative complication							
2 (Sarikkola, Serrano-Aguilar)	Not serious	Not serious	Not serious	Serious[1]	2,613 eyes	RR 0.76 (0.55, 1.07)	Moderate
Any serious postoperative complication (corneal oedema, macular oedema, wound leak or iris prolapse)							
2 (Sarikkola,	Not serious	Not serious	Not serious	Very serious[2]	2,610 eyes	RR 1.64 (0.57, 4.72)	Low

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI) Higher numbers favour DSCS	Quality
Serrano-Aguilar)							
Subjective visual function (VF-14) – change from preoperative to before second eye surgery in DSCS group							
1 (Serrano-Aguilar)	Not serious	N/A	Not serious	Not serious	807 people	MD -11.40 (-14.44, -8.36)	High
Subjective visual function (VF-7 or VF-14) – change from preoperative to 1 month post second eye surgery							
2 (Sarikkola, Serrano-Aguilar)	Not serious	Not serious	Not serious	Serious[3]	1,298 people	SMD -0.07 (-0.23, 0.09)	Moderate
Subjective visual function (VF-14) – change from preoperative to 1 year post surgery							
1 (Serrano-Aguilar)	Not serious	N/A	Not serious	Serious[3]	751 people	MD 2.20 (-0.92, 5.32)	Moderate
Pain during surgery (any pain versus no pain)							
1 (Sarikkola)	Not serious	N/A	Not serious	Serious[1]	993 people	RR 1.12 (0.90, 1.39)	Moderate
Satisfaction with surgery (very satisfied versus less than very satisfied)							
1 (Sarikkola)	Not serious	N/A	Not serious	Not serious	989 people	RR 0.99 (0.97, 1.02)	High
Satisfaction with vision (Likert scale)							
1 (Sarikkola)	Not serious	N/A	Not serious	Serious[3]	491 people	MD 0.10 (-0.06, 0.26)	Moderate
Deviation from target refraction (proportion < 0.5D)							
1 (Sarikkola)	Not serious	N/A	Not serious	Not serious	982 eyes	RR 1.03 (0.95, 1.12)	High
Deviation from target refraction (proportion < 1.0D)							
1 (Sarikkola)	Not serious	N/A	Not serious	Not serious	982 eyes	RR 1.00 (0.95, 1.06)	High
Visual acuity (medians) – change from preoperative to post second eye surgery							
3 (Lundström, Sarikkola, Serrano-Aguilar)	Serious[4]	Not serious	Not serious	Very serious[5]	1,386 people	Lunström diff in medians: 0 Sarikkola diff in medians: 0 Serrano-Aguilar diff in medians: 0	Very low

[1] Crosses 1 line of a defined MID
[2] Crosses 2 lines of a defined MID

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Sample size	Absolute (95% CI) Higher numbers favour DSCS	Quality
[3] Non-significant result [4] Only median values reported [5] No measures of dispersion reported							

G.6.393 Second-eye surgery versus no second-eye surgery

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Other	Sample size	Absolute (95% CI) Higher numbers favour second-eye surgery	Quality
Best-corrected visual acuity (logMAR)								
3 (Castells, Foss, Laidlaw)	Not serious	Not serious	Not serious	Not serious	none	685 people	MD -0.05 (-0.07, -0.03)	High
Contrast sensitivity								
3 (Castells, Foss, Laidlaw)	Not serious	Serious[1]	Not serious	Not serious	none	685 people	MD 0.11 (0.02, 0.21)	Moderate
Stereopsis								
1 (Castells)	Not serious	N/A	Not serious	Not serious	none	274 people	MD 0.62 (0.45, 0.79)	High
Visual function (VF-14)								
2 (Castells, Foss)	Not serious	Not serious	Not serious	Not serious	none	503 people	MD 7.78 (5.91, 9.64)	High
Falls								
1 (Foss)	Not serious	N/A	Not serious	Serious[2]	none	229 people	RR 1.47 (0.84, 2.59)	Moderate
Change in quality of life (EQ-5D)								
1 (Foss)	Not serious	N/A	Not serious	Serious[3]	none	229 people	MD 0.02 (-0.03, 0.08)	Moderate
Change in trouble with vision								
1 (Castells)	Not serious	N/A	Not serious	Not serious	none	274 people	MD 0.51 (0.23, 0.79)	High
Change in satisfaction with vision								
1 (Castells)	Not serious	N/A	Not serious	Not serious	none	274 people	MD 0.40 (0.20, 0.61)	High
[1] i^2 value > 75%								

Number of RCTs	Risk of bias	Inconsistency	Indirectness	Imprecision	Other	Sample size	Absolute (95% CI) Higher numbers favour second-eye surgery	Quality

[2] Crosses 1 line of a defined MID

[3] Non-significant result

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G.7 Anaesthesia

- What is the optimal type and administration of anaesthesia for cataract surgery?
- What is the effectiveness of sedation as an adjunct to local anaesthesia during cataract surgery?
- What is the effectiveness of hyaluronidase as an adjunct to local anaesthesia during cataract surgery?
- In what circumstances should general anaesthesia be considered in phacoemulsification cataract surgery?

G.7.1 Type and administration of anaesthesia

G.7.1.1 Pain

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Warmed (37°C) vs Room temperature anaesthetic - Injection pain scores (0-100)								
3 Jaichandran (2010), Krause (1997), Ursell (1996)	RCT	Serious[1]	N/A	Serious[3]	Not serious	210	MD -10.40 (-15.82, -4.99)	Low
Lidocaine vs Bupivacaine - Pain score on application of anaesthetic (0-100)								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	MD 14.40 (11.98, 16.82)	Moderate
Lidocaine vs Benoxinate - Pain score on application of anaesthetic (0-100)								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	MD 19.40 (17.03, 21.77)	Moderate
Bupivacaine vs Benoxinate - Pain score on application of anaesthetic (0-100)								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	MD 5.00 (3.61, 6.39)	Moderate
Lidocaine vs Levobupivacaine - Pain score on application of anaesthetic (0-100)								
1 McLure (2005)	RCT	Not serious	N/A	Serious[3]	Serious[2]	91	MD -3.50 (-9.89, 2.89)	Low
Topical vs Peribulbar - Pain score on application of anaesthetic (0-100)								
2 Uusitalo (1999), Virtanen (1998)	RCT	Not serious	Serious[4]	Not serious	Serious[2]	399	MD -8.98 (-30.63, 12.68)	Low
Topical vs Retrobulbar - Pain score on application of anaesthetic (0-100)								
1 Ryu (2009)	RCT	Serious[1]	N/A	Not serious	Not serious	54	MD -49.10 (-53.89, -44.31)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Topical vs Sub-Tenon's block - Pain score on application of anaesthetic (0-100)								
3 Mathew (2003), Srinivasan (2004), Zafrakis (2001)	RCT	Not serious	Serious[4]	Not serious	Serious[2]	520	MD -6.26 (-13.56, 1.04)	Low
Lidocaine vs Bupivacaine - Pain score during surgery (0-100)								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	MD -25.0 (-35.40, -14.60)	Moderate
Lidocaine vs Benoxinate - Pain score during surgery (0-100)								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	MD -55.0 (-63.66, -46.34)	Moderate
Bupivacaine vs Benoxinate - Pain score during surgery (0-100)								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	MD -30.0 (-39.53, -20.47)	Moderate
Lidocaine vs Levobupivacaine - Pain score during surgery (0-100)								
1 McLure (2005)	RCT	Not serious	N/A	Serious[3]	Serious[2]	91	MD 4.00 (-0.39, 8.39)	Low
Topical vs Peribulbar anaesthesia - Pain score during surgery (0-100)								
5 Naeem (2007), Sauder (2003), Uusitalo (1999), Virtanen (1998), Zahetmayer (1996)	RCT	Not serious	Serious[4]	Not serious	Not serious	811	MD 6.29 (0.59, 11.99)	Moderate
Topical vs Retrobulbar anaesthesia - Pain score during surgery (0-100)								
4 Jacobi (2000), Patel (1996), Patel (1998), Ryu (2009)	RCT	Not serious	Serious[4]	Not serious	Not serious	758	MD 8.42 (0.84, 15.99)	Moderate
Topical vs Topical with intracameral anaesthesia - Pain score during surgery (0-100)								
5 Boulton (2000), Crandall (1999), Gillow (1999), Roberts (2002), Tseng (1998)	RCT	Not serious	Not serious	Not serious	Not serious	825	MD 2.70 (1.07, 4.33)	High
Topical vs Topical with intracameral anaesthesia - Pain score during surgery (dichotomous)								

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
3 Carino (1998), Gills (1997), Martin (1998)	RCT	Not serious	Not serious	Not serious	Not serious	456	RR 1.67 (1.32, 2.12)	High
Topical vs Sub-Tenon's block - Pain score during surgery (0-100)								
4 Chittenden (1997), Mathew (2003), Srinivasan (2004), Zafrakis (2001)	RCT	Not serious	Not serious	Not serious	Not serious	557	MD 9.96 (4.96, 14.97)	High
Peribulbar vs Retrobulbar - Pain score during surgery (0-100)								
1 Alhassan (2015) – contains 2 studies	RCT	Serious[1]	N/A	Not serious	Serious[2]	221	MD -0.80 (-4.24, 2.65)	Low
Topical vs Retrobulbar – Pain during whole procedure (application and surgery (0-100))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Not serious	86	MD -6.52 (-10.93, -2.11)	Moderate
Topical vs Sub-Tenon's – Pain during whole procedure (application and surgery (0-100))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Serious[2]	86	MD 1.78 (-1.05, 4.61)	Low
Retrobulbar vs Sub-Tenon's – Pain during whole procedure (application and surgery (0-100))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Not serious	86	MD 8.30 (4.41, 12.19)	Moderate

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses the line of no effect, downgrade 1 level.
[3] Study does not state whether phacoemulsification
[4] I^2 value >75%, downgrade 1 level

G.7.112 Patient satisfaction

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Lidocaine vs Bupivacaine – Patient satisfaction (willing to have the same anaesthetic again (%))								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Serious[2]	60	RR 1.12 (0.93, 1.35)	Low
Lidocaine vs Benoxinate – Patient satisfaction (willing to have the same anaesthetic again (%))								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	RR 2.80 (1.67, 4.69)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Bupivacaine vs Benoxinate – Patient satisfaction (willing to have the same anaesthetic again (%))								
1 Soliman (2004)	RCT	Serious[1]	N/A	Not serious	Not serious	60	RR 2.50 (1.47, 4.25)	Moderate
Topical vs Retrobulbar - Patient satisfaction (preference for anaesthetic procedure (%))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Very serious[5]	86	RR 1.00 (0.49, 2.06)	Very low
Topical vs Sub-Tenon's - Patient satisfaction (preference for anaesthetic procedure (%))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Very serious[5]	86	RR 0.85 (0.43, 1.67)	Very low
Sub-Tenon's vs Retrobulbar - Patient satisfaction (preference for anaesthetic procedure (%))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Very serious[5]	86	RR 1.18 (0.60, 2.34)	Very low
Topical vs Retrobulbar - Patient satisfaction (would not have anaesthetic procedure again (%))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Not serious	86	RR 0.47 (0.23, 0.97)	Moderate
Topical vs Sub-Tenon's - Patient satisfaction (would not have anaesthetic procedure again (%))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Very serious[5]	86	RR 1.17 (0.46, 2.94)	Very low
Sub-Tenon's vs Retrobulbar - Patient satisfaction (would not have anaesthetic procedure again (%))								
1 Nielson (1998)	RCT	Serious[1]	N/A	Not serious	Not serious	86	RR 0.40 (0.19, 0.87)	Moderate
Topical vs Retrobulbar / Peribulbar – Patient satisfaction (%) – lower numbers favour topical anaesthesia								
1 Zhao (2012)	Systematic review	Not serious	N/A	Not serious	Not serious	266	RR 0.48 (0.34, 0.67)	High

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses one defined MID – downgrade 1 level.
[3] Study does not state whether phacoemulsification
[4] I^2 value >75%, downgrade 1 level
[5] 95% CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels

G.7.1103 Adverse surgical events

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Lidocaine vs levobupivacaine – Small conjunctival haemorrhage								
1 McLure (2005)	RCT	Not serious	N/A	Serious[3]	Serious[2]	91	RR 0.73 (0.47, 1.13)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Lidocaine vs levobupivacaine – Chemosis								
1 McLure (2005)	RCT	Not serious	N/A	Serious[3]	Very serious[5]	91	RR 1.19 (0.65, 2.16)	Very low
Topical vs Topical with intracameral anaesthesia - Adverse surgical event								
5 Boulton (2000), Crandall (1999), Gills (1997), Martin (1998), Roberts (2002)	RCT	Not serious	Not serious	Not serious	Very serious[5]	459	RR 0.84 (0.19, 3.77)	Low
Sub-Tenon's vs Topical anaesthesia – Post-operative Iritis								
1 Sekundo (2004)	RCT	Serious[1]	N/A	Not serious	Very serious[5]	100	RR 1.00 (0.06, 15.55)	Very low
Sub-Tenon's vs Topical anaesthesia – Iris prolapse								
1 Srinivasan (2004)	RCT	Not serious	N/A	Not serious	Very serious[5]	201	RR 1.45 (0.06, 35.00)	Low
Sub-Tenon's vs Topical anaesthesia – Posterior capsule tear								
1 Srinivasan (2004)	RCT	Not serious	N/A	Not serious	Very serious[5]	201	RR 0.32 (0.05, 1.86)	Low
Sub-Tenon's vs Topical anaesthesia – Chemosis								
1 Vielpeau (1999)	RCT	Serious[1]	N/A	Not serious	Not serious	50	RR 31.00 (1.96, 491.36)	Moderate
Sub-Tenon's vs Topical anaesthesia – Subconjunctival haemorrhage								
1 Vielpeau (1999)	RCT	Serious[1]	N/A	Not serious	Not serious	50	RR 1.00 (0.93, 1.08)	Moderate
Topical vs Retrobulbar / Peribulbar – Intraoperative Capsule rupture (rate)								
1 Zhao (2012)	Systematic review	Not serious	Serious[6]	Not serious	Very serious[5]	2,075	RR 0.93 (0.49, 1.74)	Low
Topical vs Retrobulbar / Peribulbar – Intraoperative Zonule tear (rate)								
1 Zhao (2012)	Systematic review	Not serious	Serious[6]	Not serious	Very serious[5]	718	RR 1.72 (0.69, 4.33)	Very low
Topical vs Retrobulbar / Peribulbar – Intraoperative Iris prolapse (rate)								
1 Zhao (2012)	Systemati	Not serious	Serious[6]	Not serious	Very serious[5]	942	RR 5.00 (0.59, 42.63)	Very low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
	c review							
Topical vs Retrobulbar / Peribulbar – Chemosis (rate)								
1 Zhao (2012)	Systematic review	Not serious	Serious[6]	Not serious	Not serious	1,231	RR 0.01 (0.00, 0.10)	Moderate
Topical vs Retrobulbar / Peribulbar – Periorbital haematoma (rate)								
1 Zhao (2012)	Systematic review	Not serious	Serious[6]	Not serious	Not serious	1,359	RR 0.01 (0.00, 0.16)	Moderate
Topical vs Retrobulbar / Peribulbar – Subconjunctival haemorrhage (rate)								
1 Zhao (2012)	Systematic review	Not serious	Serious[6]	Not serious	Not serious	1,231	RR 0.04 (0.01, 0.29)	Moderate
Peribulbar vs Retrobulbar – Retrobulbar haemorrhage								
1 Athanikar (1991)	RCT	Not serious	N/A	Not serious	Very serious[5]	142	RR 0.33 (0.01, 8.05)	Low
Peribulbar vs Retrobulbar – Conjunctival chemosis								
4 Ali-Melkkila (1992), Ali-Melkkila (1993), Athanikar (1991), Wong (1993)	RCT	Not serious	Not serious	Not serious	Not serious	1,042	RR 2.22 (1.29, 3.80)	High
Peribulbar vs Retrobulbar – Lid haematoma								
1 Ali-Melkkila (1993)	RCT	Not serious	N/A	Not serious	Not serious	450	RR 0.36 (0.15, 0.88)	High
Peribulbar vs Retrobulbar – Ptosis								
1 (Ali-Melkkila)	RCT	Not serious	N/A	Not serious	Very serious[5]	317	RR 1.06 (0.43, 2.60)	Low

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses the line of no effect, downgrade 1 level.
[3] Study does not state whether phacoemulsification, downgrade 1 level
[4] I^2 value >75%, downgrade 1 level
[5] 95% CI crosses over both appreciable benefit and harm – 0.80 and 1.25, downgrade 2 levels

G.7.1104 Network meta-analyses

Quality assessment						No of patients	Effect estimate	Quality
No of studies	Design	Risk of bias	Indirectness	Inconsistency	Imprecision		Summary of results	
Anaesthetic drug								
Pain on application								
2 (McLure 2005, Soliman 2004)	RCT	Serious[1]	Not serious	N/A	Not serious	181	See Appendix H	Moderate
Pain during surgery								
2 (McLure 2005, Soliman 2004)	RCT	Serious[1]	Not serious	N/A	Not serious	181	See Appendix H	Moderate
Method of anaesthesia								
Pain on application								
6 (Mathew 2003, Ryu 2009, Srinivasan 2004, Uusitalo 1999, Virtanen 1998, Zafrakis 2001)	RCT	Not serious	Not serious	Serious[2]	Not serious	973	See Appendix H	Moderate
Pain during surgery								
20 (Athanikar 1991, Boulton 2000, Chittenden 1997, Crandall 1999, Gillow 1999, Jacobi 2000, Naeem 2007, Mathew 2003, Patel 1996, Patel 1998, Roberts 2002, Ryu 2009, Sauder 2003, Srinivasan 2004, Tseng 1998, Uusitalo 1999, Virtanen 1998, Weiss 1989, Zafrakis 2001, Zehetmayer 1996)	RCT	Not serious	Not serious	Serious[2]	Not serious	3,172	See Appendix H	Moderate

[1] Poor reporting of randomisation method.

[2] i^2>50%.

G.7.2205 Sedation as an adjunct to local anaesthesia

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Local anaesthesia and fentanyl vs local anaesthesia only - pain on administration of anaesthetic (Verbal Pain Score (0-100))								
1 Inan (2003)	RCT	Serious[1]	N/A	Not serious	Not serious	120	MD -38.50 (-42.15, -34.85)	Moderate
Local anaesthesia and fentanyl vs local anaesthesia only - pain during surgery (Verbal Pain Score (0-100))								
1 Inan (2003)	RCT	Serious[1]	N/A	Not serious	Not serious	120	MD -24.50 (-26.83, -22.17)	Moderate
Patient satisfaction (Satisfaction with analgesia 1-4)								
1 Aydin (2002)	RCT	Not serious	N/A	Not serious	Not serious	68	MD 0.35 (0.05, 0.65)	High

[1] No report of randomisation method - downgrade 1 level.

G.7.306 Hyaluronidase as an adjunct to local anaesthesia

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
Pain on injection of anaesthetic (Yes/No)								
1 Guise (1999)	RCT	Serious[1]	N/A	Not serious	Serious[2]	120	RR 0.53 (0.26, 1.09)	Low
Pain during surgery (Yes/No)								
1 Guise (1999)	RCT	Serious[1]	N/A	Not serious	Serious[2]	120	RR 0.20 (0.01, 4.08)	Low
Patient intraoperative satisfaction (Yes/No)								
1 Seghipour (2012)	RCT	Not serious	N/A	Not serious	Not serious	42	RR 1.5 (1.00, 2.26)	High
Median effective volumes of local anaesthetic required for a sub-Tenon's block (ml)								
1 Schulenburg (2007)	RCT	Serious[1]	N/A	Not serious	Serious[3]	62	Median ratio estimate 2.4 (IQR 1.8 to 3.4)	Low
Mean post-injection of anaesthetic pain scores (0-100)								
1 Rowley	RCT	Not serious	N/A	Not serious	Very	150	MD 0.34 (Not significant)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	Effect size (95% CI)	Quality
(2000)					serious[4]			
Mean pain during surgery (0-100)								
1 Rowley (2000)	RCT	Not serious	N/A	Not serious	Very serious[4]	150	MD 0.01 (Not significant)	Low

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses the line of no effect, downgrade 1 level.
[3] Reporting median values, downgrade 1 level.
[4] Not reporting significance levels, downgrade 2 levels.

G.7.4 General anaesthesia

As no evidence was found, there is no GRADE table associated with this question.

G.8 Preventing and managing complications

- What is the effectiveness of interventions (for example, prophylactic laser surgery) to prevent retinal detachment in people with myopia undergoing cataract surgery?
- What is the effectiveness of capsular tension rings applied during phacoemulsification cataract surgery?
- What is the effectiveness of interventions to increase pupil size to improve visual outcomes and reduce complications during phacoemulsification cataract surgery?
- What is the effectiveness of postoperative eye shields to prevent complications after cataract extraction?
- What is the effectiveness of prophylactic antiseptics (for example, topical iodine) and antibiotics to prevent endophthalmitis after cataract surgery?
- What is the effectiveness of prophylactic topical corticosteroids and/or NSAIDs to prevent inflammation and cystoid macular oedema after phacoemulsification cataract surgery?
- What is the effectiveness of interventions to reduce the impact of perioperative posterior capsule rupture?
- What is the effectiveness of interventions used to manage cystoid macular oedema following cataract surgery?

G.8.1 Interventions to prevent retinal detachment in people with myopia

As no evidence was found, there is no GRADE table associated with this question.

G.8.2 Intra-operative pupil size management

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Best corrected visual acuity (6 months postoperatively) – DisCoVisc vs HPMC								
1 Espindola (2012)	RCT	Not serious	N/A	Not serious	Serious[2]	78 eyes	MD -0.03 (-0.07, 0.01)	Moderate
Best corrected visual acuity (28 days postop) – Viscoat vs VisThesia								
1 Moschos (2011)	RCT	Serious[1]	N/A	Not serious	Serious[2]	77 eyes	MD 0.00 (-0.00, 0.00)	Low
Best corrected visual acuity (6 months postoperatively) – Viscoat vs VisThesia								

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
1 Papacontantinou (2014)	RCT	Serious[1]	N/A	Not serious	Serious[2]	44 eyes	MD 0.02 (-0.75, 0.79)	Low
Best corrected visual acuity (3 months postoperatively) – Intracameral Phenylephrine vs Balanced salt solution								
1 Lorente (2012)	RCT	Serious[1]	N/A	Not serious	Serious[2]	84 eyes	MD -0.01 (-0.04, 0.02)	Low
Mean Best corrected visual acuity - decimal (3-6 weeks postoperatively) – Anterior Chamber Maintainer vs Vitrax								
1 Shingleton (2001)	Case-control	Very serious[4]	N/A	Not serious	Serious[2]	66 eyes	MD 0.05 (-0.05, 0.15)	Very low
Best corrected visual acuity (1 year postoperatively) – Pupil stretching vs no stretching								
1 Shingleton (2006)	Retrospective case-control	Very serious[4]	N/A	Not serious	Serious[2]	240 eyes	MD 0.05 (-0.01, 0.11)	Very low
Best corrected visual acuity – decimal (1 month postoperatively) – Malyugin Ring vs Manual stretching								
1 Wilczynski (2013)	RCT	Not serious	N/A	Not serious	Serious[2]	40 eyes	MD 0.19 (-0.10, 0.48)	Moderate
Mean pupil size (mm) after hydrodissection								
1 Lorente (2012)	RCT	Serious[1]	N/A	Not serious	Not serious	84 eyes	MD 1.11 (0.63, 1.59)	Moderate

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses the line of no effect - downgrade 1 level.
[3] Retrospective study - downgrade 1 level.
[4] Case-control study – downgrade 2 levels

G.8.3 Interventions to reduce the impact of perioperative posterior capsule rupture

As no evidence was found, there is no GRADE table associated with this question.

G.8.4128 Capsular tension rings

G.8.41129 Full population

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Corrected distance visual acuity – 3 months postoperatively (logMAR)								
2 Alio (2012) & Park (2016)	RCT	Not serious	Serious[3]	Not serious	Serious[2]	142 eyes	MD -0.01 (-0.05, 0.03)	Low
Uncorrected distance visual acuity – 3 months postoperatively (logMAR)								
2 Alio (2012) & Park (2016)	RCT	Not serious	Not serious	Not serious	Serious[2]	142 eyes	MD 0.00 (-0.05, 0.05)	Moderate
Uncorrected near visual acuity – 3 months postoperatively (logRAD)								
1 Alio (2012)	RCT	Not serious	N/A	Not serious	Serious[2]	90 eyes	MD 0.01 (-0.06, 0.08)	Moderate
Distance-corrected near visual acuity – 3 months postoperatively (logRAD)								
1 Alio (2012)	RCT	Not serious	N/A	Not serious	Not serious	90 eyes	MD -0.08 (-0.15, -0.01)	High
Corrected near visual acuity – 3 months postoperatively (logRAD)								
1 Alio (2012)	RCT	Not serious	N/A	Not serious	Serious[2]	90 eyes	MD 0.01 (-0.04, 0.06)	Moderate
Best corrected visual acuity – 3 months postoperatively (logMAR)								
1 Kocabora (2007)	RCT	Serious[1]	N/A	Not serious	Serious[2]	84 eyes	MD 0.10 (-0.00, 0.20)	Low
Best spectacle-corrected visual acuity – 3 months postoperatively (logMAR)								
1 Rohart (2009)	RCT	Not serious	N/A	Not serious	Serious[2]	40 eyes	MD -0.02 (-0.08, 0.04)	Moderate
Cylindrical error – 3 months postoperatively (Dioptres)								

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
1 Park (2016)	RCT	Not serious	N/A	Not serious	Serious[2]	52 eyes	MD -0.06 (-0.34, 0.22)	Moderate
Corneal oedema								
1 Bayraktar (2001)	RCT	Serious[1]	N/A	Not serious	Serious[2]	78 eyes	RR 1.04 (0.77, 1.41)	Low
IOL decentration (mm) – 60 days postoperatively								
1 Lee (2002)	RCT	Serious[1]	N/A	Not serious	Not serious	40 eyes	MD -0.15 (-0.25, -0.05)	Moderate
IOL decentration (mm) – 360 days postoperatively (x-axis)								
1 Mastropasqua (2013)	RCT	Not serious	N/A	Not serious	Serious[2]	60 eyes	MD 0.17 (-0.06, 0.40)	Moderate
IOL decentration (mm) – 360 days postoperatively (y-axis)								
1 Mastropasqua (2013)	RCT	Not serious	N/A	Not serious	Not serious	60 eyes	MD 0.10 (0.06, 0.14)	High

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses the line of no effect, downgrade 1 level.
[3] I^2 value >75%, downgrade 1 level

G.8.41230 People with pseudoexfoliation

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Zonular dehiscence (lower values favour CTR)								
2 Bayraktar (2001) & Kocabora (2007)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	162	RR 0.23 (0.06, 0.88)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
IOL in the bag correctly (higher values favour CTR)								
2 Bayraktar (2001) & Kocabora (2007)	RCT	Serious[1]	Not serious	Not serious	Serious[2]	162	RR 1.23 (1.07, 1.42)	Low

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses one line of a defined MID, downgrade 1 level.

G.8.5 Interventions to prevent endophthalmitis

G.8.5.1 Antibiotics

Endophthalmitis rates (culture-proven cases) (ESCRS 2007 – 16,603 participants)

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Effect size (95% CI)	Quality
Topical levofloxacin vs. no prophylaxis							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Very serious[1]	RR 0.70 (0.27, 1.84)	Low
Intracameral cefuroxime alone vs. topical levofloxacin alone							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Very serious[1]	RR 0.29 (0.06, 1.37)	Low
Intracameral cefuroxime alone vs. no prophylaxis							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Serious[1]	RR 0.20 (0.04, 0.91)	Moderate
Intracameral cefuroxime with topical levofloxacin vs. no prophylaxis							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Not serious	RR 0.10 (0.01, 0.78)	High
Combined intracameral cefuroxime and topical levofloxacin vs. topical levofloxacin alone							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Serious[1]	RR 0.14 (0.02, 1.16)	Moderate

[1] Crossed the MID of 0.8-1.25 (if both MID points were crossed, evidence was downgraded twice)

134 **Endophthalmitis rates (clinically-diagnosed cases) (ESCRS 2007 – 16,603 participants)**

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (95% CI)	Overall quality
Topical levofloxacin alone and placebo drops							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Very serious[1]	RR 0.72 (0.32, 1.61)	Low
Intracameral cefuroxime alone vs. topical levofloxacin alone							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Serious[1]	RR 0.30 (0.08, 1.09)	Moderate
Intracameral cefuroxime alone vs. no prophylaxis							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Not serious	RR 0.21 (0.06, 0.74)	High
Intracameral cefuroxime with topical levofloxacin vs. no prophylaxis							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Not serious	RR 0.14 (0.03, 0.63)	High
Combined intracameral cefuroxime and topical levofloxacin vs. topical levofloxacin alone							
Endophthalmitis rates	1	Not serious	N/A	Not serious	Serious[1]	RR 0.20 (0.04, 0.91)	Moderate

[1] Low risk of bias as assessed by Cochrane's Risk of Bias tool;
[2] Crossed the MID of 0.8-1.25

135 **Endophthalmitis rates (Sobaci et al. 2003 – 640 participants)**

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (95% CI)	Overall quality
BSS with vancomycin and gentamicin and BSS alone							
Endophthalmitis rates	1	Serious[1]	N/A	Not serious	Very serious[2]	RR 0.20 (0.01, 4.15)	Very low

[1] Serious risk of bias as assessed by Cochrane's Risk of Bias tool;
[2] Crossed the MID of 0.8-1.25 (if both numbers were crossed it was downgraded twice)

G.8.6 136 Intervention to prevent cystoid macular oedema

G.8.6.1 137 Pairwise meta-analyses

138 **NSAIDs plus steroids vs. steroids**

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (CI)	Overall quality

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (CI)	Overall quality
Inflammation (flare) [photons/ms]	1 (Miyanga 2009) – 47 participants	Very serious[1]	N/A	Not serious	Not serious	MD: -3.30 (-6.10, -0.50)	Low
Inflammation (events)	2 (Chatziralli 2011, Coste 2009) – 198 participants	Serious[2]	Serious[3]	Not serious	Very serious[4]	RR: 4.86 (0.24, 99.39)	Very low
CMO	9 (Almeida 2008, Chatziralli 2011, Donnenfeld 2006, Jung 2015, Miyanga 2009, Moschos 2012, Wittpenn 2008, Yavas 2007, Zaczek 2004 – 1,388 participants	Very serious[1]	Not serious	Not serious	Not serious	RR: 0.22 (0.11, 0.41)	Low
BCVA [logMAR]	7 (Almeida 2012, Chatziralli 2011, Mathys 2010, Miyanga 2009, Moschos 2012, Yavas 2007, Zaczek 2014) – 782 participants	Very serious[1]	Not serious	Not serious	Serious[5]	MD: -0.01 (-0.02, 0.06)	Very low
Poor vision due to CMO	3 (Chatrziralli 2011, Coste 2009, Wittpenn 2008) – 679 participants	Very serious[1]	Not serious	Not serious	Very serious[4]	RR: 0.22 (0.01, 4.52)	Very low
Adverse events	10 (Almeida 2008, Chatziralli 2011, Donnenfeld 2006, Jung 2015, Mathys 2010, Miyanga 2009, Moschos 2012, Wittpenn	Very serious[1]	Serious[6]	Not serious	Serious[6]	See AEs table in Appendix F	Very low

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (CI)	Overall quality
	2008, Yavas 2007, Zaczek 2004 – 1,467 participants						

[1] Very serious risk of bias as assessed by Cochrane's Risk of Bias tool;
[2] Serious risk of bias as assessed by Cochrane Risk of Bias tool;
[3] I^2>75%;
[4] Crossed the MID of 0.8-1.25;
[5] Non-significant results;
[6] Inconsistent reporting of AEs

139 **NSAIDs plus steroids vs. steroids (population with diabetic retinopathy)**

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (CI)	Overall quality
CMO	2 (Pollack 2016, Singh 2012) – 409 participants	Serious[1]	Not serious	Not serious	Not serious	RR: 0.26 (0.12, 0.55)	Moderate
BCVA [letters]	2 (Pollack 2016, Singh 2012) – 404 participants	Serious[1]	Not serious	Not serious	Very serious[2]	Letters 1.56 (-0.23, 3.34)	Very low
BCVA - Proportion losing 5 letters	2 (Pollack 2016, Singh 2012) – 405 participants	Serious[1]	Not serious	Not serious	Serious[2]	RR 0.48 (0.25, 0.93)	Low

[1] Serious risk of bias as assessed by Cochrane's Risk of Bias tool;
[2] Crossed the MID of 0.8-1.25 (if both MID points were crossed, evidence was downgraded twice)

140 **NSAIDs vs. steroids**

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (CI)	Overall quality
Inflammation (flare) [photons/ms]	5 (Asano 2008, Endo 2010, Miyake 2007, Miyake 2011, Miyanga 2009) – 346 participants	Very serious[1]	Not serious	Not serious	Serious[3]	MD: -1.64 (-3.49, 0.21)	Very low
CMO	4 (Asano 2008, Miyake 2007, Miyake	Very serious[1]	Not serious	Not serious	Not serious	RR: 0.26 (0.17, 0.41)	Low

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (CI)	Overall quality
	2011, Miyanga 2009) – 291 participants						
BCVA [logMAR]	3 (Asano 2008, Endo 2010, Miyanga 2009) – 220 participants	Very serious[1]	Serious[2]	Not serious	Serious[3]	MD: -0.00 (-0.05, 0.04)	Very low
Adverse events	5 (Asano 2008, Endo 2010, Miyake 2007, Miyake 2011, Miyanga 2009) – 346 participants	Very serious[1]	Serious[4]	Not serious	Serious[4]	See AEs table in Appendix F	Very low

[1] Very serious risk of bias as assessed by Cochrane's Risk of Bias tool;
[2] I^2>75%;
[3] Non-significant results;
[4] Inconsistent reporting of AEs

G.8.6 Network meta-analyses

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Overall quality
Inflammation (flare) [photons/ms]	5 (370 participants)	Very serious[1]	Not serious	Not serious	Not serious	Low
CMO	12 (1,656 participants)	Very serious[1]	Not serious	Not serious	Not serious	Low
BCVA [logMAR]	9 (979 participants)	Very serious[1]	Not serious	Not serious	Not serious	Low

[1] Very serious risk of bias as assessed by Cochrane's Risk of Bias tool

G.8.7 Managing cystoid macular oedema

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
Prednisolone vs Ketorolac - Final visual acuity ≥ 20/40								
1 Heier (2000)	RCT	Serious[1]	N/A	Not serious	Serious[2]	26	RR 0.75 (0.33, 1.72)	Low
Prednisolone vs Ketorolac plus Prednisolone - Final visual acuity ≥ 20/40								
1 Heier	RCT	Serious[1]	N/A	Not serious	Serious[2]	26	RR 0.64 (0.37, 1.10)	Low

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No of participants	Effect size (95% CI)	Quality
(2000)								
Ketorolac vs Ketorolac plus Prednisolone - Final visual acuity ≥ 20/40								
1 Heier (2000)	RCT	Serious[1]	N/A	Not serious	Serious[2]	26	RR 0.68 (0.42, 1.10)	Low
Ketorolac vs Diclofenac - Patients with CMO elimination (%)								
1 Rho (2003)	RCT	Serious[1]	N/A	Not serious	Serious[2]	34	RR 0.96 (0.66, 1.40)	Low
Ketorolac vs Diclofenac - Mean time to CMO elimination (weeks)								
1 Rho (2003)	RCT	Serious[1]	N/A	Not serious	Serious[2]	34	MD -0.80 (-2.58, 0.98)	Low
Ketorolac vs Ketorolac plus Prednisolone - Mean Snellen equivalent visual acuity (90 days)								
1 Singal (2004)	RCT	Serious[1]	N/A	Not serious	Serious[2]	10	MD -4.70 (-33.71, 24.31)	Low

[1] No report of randomisation method - downgrade 1 level.
[2] 95% CI crosses the line of no effect, downgrade 1 level.

G.8.8 Postoperative eye shields

As no evidence was found, there is no GRADE table associated with this question.

G.9 Postoperative assessment

- What are the early and late complications of cataract surgery?
- What should the postoperative assessment include?
- Who and in what setting should carry out the postoperative assessment?
- What issues should be considered when organising postoperative care?
- What is the appropriate time to assess outcomes in the postoperative period?
- If the postoperative assessment and care are undertaken outside of the hospital, how should outcomes between surgical units and these providers be effectively communicated?

G.9.1 Complications of surgery

G.9.1.1 Postoperative complications

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% incidence (95% CI)	Quality
Retinal detachment								
5 Bjerrum (USA) Boberg-Ans (Denmark) Clark (Australia) Day 2016 (UK) Olsen (Denmark) Petousis (UK)	Retrospective cohort Retrospective cohort Retrospective longitudinal Retrospective case series Retrospective cohort Retrospective cohort	Serious[1] (in all studies)	N/A	Not serious (In all studies)	N/A	202,226 6,352 65,055 46,824 7,856 18,065	0.23 (0.21, 0.25) 0.93 (0.65, 1.33) 0.25 (0.19, 0.33) 0.21 (0.18, 0.25) 0.39 (0.28, 0.50) 0.30 (0.29, 0.33)	Moderate (in all studies)
Retinal detachment (90 days postoperatively)								
2 Ianchulev (USA) Day 2015 (UK)	Retrospective case series Retrospective cohort	Serious[1] (in both studies)	N/A	Not serious (In both studies)	N/A	21,484 127,685	0.14 (0.09, 0.19) 0.03 (0.02, 0.04)	Moderate (in all studies)
Retinal detachment during postoperative care								
1	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4,683	0.04 (0.01, 0.11)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% incidence (95% CI)	Quality
Venter (UK)								
Endophthalmitis								
2 Colleaux (Canada) Creuzot-Garcher (France)	Retrospective chart review Retrospective cohort	Serious[1] (in both studies)	N/A	Not serious Serious[3]	N/A	13,866 3,983,525	0.072 (0.028, 0.117) 0.053 (0.048, 0.059)	Moderate Low
Endophthalmitis - during postoperative care								
1 Venter (UK)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4,683	0.10 (0.04, 0.18)	Moderate
Endophthalmitis (90 days postoperatively)								
2 Day 2015 (UK) Freeman (Canada)	Retrospective cohort Retrospective chart review	Serious[1] (in both studies)	N/A	Not serious (In both studies)	N/A	127,685 490,690	0.03 (0.02, 0.04) 0.08 (0.06, 0.11)	Moderate (in both studies)
Endophthalmitis (6 weeks postoperatively)								
1 Du (USA)	Retrospective cohort	Very serious[1,2]	N/A	Not serious	N/A	2,261,779	0.063 (0.059, 0.066)	Low
Fungal endophthalmitis (6 weeks postoperatively)								
1 Du (USA)	Retrospective cohort	Very serious[1,2]	N/A	Not serious	N/A	2,261,779	0.0020 (0.0017, 0.0029)	Low
Endophthalmitis (6 months postoperatively)								
1 Du (USA)	Retrospective cohort	Very serious[1,2]	N/A	Not serious	N/A	2,261,779	0.09 (0.08, 0.09)	Low
Fungal endophthalmitis (6 months postoperatively)								
1 Du (USA)	Retrospective cohort	Very serious[1,2]	N/A	Not serious	N/A	2,261,779	0.005 (0.004, 0.006)	Low
Macular oedema (90 days postoperatively)								
2	Retrospective case series	Serious[1]	N/A	Not serious	N/A	81,984	1.17 (1.09, 1.24)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% incidence (95% CI)	Quality
Chu (UK) Ianchulev (USA)	Retrospective case series	(in both studies)		(in both studies)		21,484	0.03 (0.01, 0.06)	(in both studies)
Macular oedema – during postoperative care								
1 Venter (UK)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4,683	1.10 (0.90, 1.32)	Moderate
Macular oedema – persisting 1 year postoperatively								
1 Venter (UK)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4,683	0.02 (0.00, 0.08)	Moderate
Corneal oedema								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.14 (0.12, 0.16)	Moderate
Corneal oedema (3 months postoperatively)								
1 Ianchulev (USA)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	21,484	0.51 (0.42, 0.61)	Moderate
Corneal oedema – persisting 1 year postoperatively								
1 Venter (UK)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4,683	0.05 (0.02, 0.12)	Moderate
Hyphema (30 days postoperatively)								
1 Ianchulev (USA)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	21,484	0.02 (0.01, 0.05)	Moderate
Iritis / Uveitis (1 to 5 months postoperatively)								
1 Ianchulev (USA)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	21,484	1.54 (1.37, 1.70)	Moderate
Raised intraocular pressure requiring treatment – persisting 1 year postoperatively								
1 Venter (UK)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4,683	0.10 (0.04, 0.18)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% incidence (95% CI)	Quality
Surgical re-intervention- during postoperative care								
1 Venter (UK)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	4683	0.50 (0.36, 0.64)	Moderate
Surgical re-intervention within 3 months								
1 Ianchulev (USA)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	21,484	0.61 (0.51, 0.71)	Moderate
Surgical re-intervention within 6 months								
1 Ianchulev (USA)	Retrospective case series	Serious[1]	N/A	Not serious	N/A	21,484	0.70 (0.59, 0.81)	Moderate
Visual loss								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	1.55 (1.47, 1.63)	Moderate

[1] Retrospective study – downgrade 1 level
[2] Code set used for search not validated for database – downgrade 1 level
[3] Inclusion of combined procedures – downgrade 1 level

G.9.1256 Intraoperative complications

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% Incidence (95% CI)	Quality
Posterior capsule rupture and/or vitreous loss (PCR)								
2 Day 2015 (UK) Ianchulev (USA)	Retrospective cohort Retrospective case series	Serious[1] (in both studies)	N/A	Not serious	N/A	127,685 21,484	1.95 (1.89, 2.01) 0.90 (0.77, 1.02)	Moderate (in both studies)
Iris trauma / prolapse								
1	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.50 (0.47, 0.53)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% Incidence (95% CI)	Quality
Day 2015 (UK)								
Zonule dialysis								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.48 (0.45, 0.52)	Moderate
Corneal epithelial abrasion								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.28 (0.25, 0.30)	Moderate
Endothelial damage / descemet's tear								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.22 (0.20, 0.25)	Moderate
Nuclear / epinuclear fragment into vitreous								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.18 (0.18, 0.19)	Moderate
Lens exchange required / other IOL problems								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.12 (0.10, 0.13)	Moderate
Phaco burn / wound problems								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.08 (0.07, 0.10)	Moderate
Hyphaema								
1	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.06 (0.04, 0.07)	Moderate

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants	% Incidence (95% CI)	Quality
Day 2015 (UK)								
Choroidal / suprachoroidal haemorrhage								
1 Day 2015 (UK)	Retrospective cohort	Serious[1]	N/A	Not serious	N/A	127,685	0.05 (0.04, 0.06)	Moderate

[1] Retrospective study – downgrade 1 level

G.9.2 Details of postoperative assessment

Outcome	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Estimate (95% CI)	Overall quality
All postoperative complications	3 (Chatziralli 2012, Saeed 2007, Tinley 2003) – 886 participants	Serious[1]	Not serious	Not serious	Serious[2]	RR 0.47 (0.24, 0.92)	Low
Serious postoperative complications	3 (Chatziralli 2012, Saeed 2007, Tinley 2003) – 886 participants	Serious[1]	Not serious	Not serious	Very serious[2]	RR 1.28 (0.24, 6.74)	Very low
Postoperative CDVA [logMAR]	3 (Chatziralli 2012, Saeed 2007, Tinley 2003) – 886 participants	Serious[1]	Not serious	Not serious	Serious[3]	MD -0.00 (-0.02, 0.01)	Low
Number of unscheduled visits	3 (Chatziralli 2012, Saeed 2007, Tinley 2003) – 886 participants	Serious[1]	Not serious	Not serious	Very serious[2]	RR 0.75 (0.39, 1.44)	Very low

[1] Serious risk of bias as assessed by Cochrane's Risk of Bias tool
[2] Crossed the MID of 0.8-1.25 (if both MID points were crossed, evidence was downgraded twice)
[3] Non-significant result