



Optometry Australia 2025

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# Cataract Care Clinical Practice Guide

*Part B: Post-surgical Care*

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# Glossary

ACRONYM	TERM
AAO	American Academy of Ophthalmology
aIOL	Accommodating intraocular lens
ARC	Age-related cataract
CCI	Clear corneal incision
CMO	Cystoid macular oedema
D	Dioptre
DM	Diabetes mellitus
DMEK	Descemet's Membrane Endothelial Keratoplasty
DSAEK	Descemet's Stripping Automated Endothelial Keratoplasty
ECCE	Extracapsular cataract extraction
EDOF	Extended depth-of-field
FLACS	Femtosecond laser-assisted cataract surgery
IOL	Intraocular lens
IOP	Intraocular pressure
LAL	Light-adjustable lens
MSICS	Manual small-incision cataract surgery
mfIOL	Multifocal intraocular lens

ACRONYM	TERM
NSAIDs	Nonsteroid anti-inflammatory drugs
NZ	New Zealand
OCT	Optical coherence tomography
PBK	Pseudophakic bullous keratopathy
PCO	Posterior capsular opacification
PCR	Posterior capsular rupture
PG	Prostaglandin
POD1	Postoperative day 1
POM1	Postoperative month 1
POW1	Postoperative week 1
PPV	Pars plana vitrectomy
PXS	Pseudoexfoliation syndrome
RANZCO	The Royal Australian and New Zealand College of Ophthalmologists
RD	Retinal detachment
UK	United Kingdom
US	United States
UV	Ultra-violet
VA	Visual acuity
VEGF	Vascular endothelial growth factor

# 1. Acknowledgement of Country

*Optometry Australia would like to acknowledge the Traditional Custodians across the lands, waters and seas that we work and live on and pay our respects to Elders past and present and thank them for their continuing custodianship.*

*Optometry Australia acknowledges Māori as tangata whenua and Treaty of Waitangi partners in Aotearoa New Zealand.*

*We pay our respects to these traditional Custodians and honour their unique cultural and spiritual relationships to the land, waters and seas and their rich and ongoing contribution to society.*

Artwork created by Bitja Patten of Bayila Creative

## 2. Development of this Guide

Optometry Australia has created this Clinical Practice Guide (CPG) in consultation with an expert working group comprised of experienced practitioners who work extensively in the area of cataract assessment and management.

### WORKING GROUP

**Nicola Anstice** – Co-chair - Optometry Australia, Director of Education and Research

**Kerryn Hart** – Co-chair – Optometry Australia, Clinical Policy Manager

**Alyssa Lie** – Literature review – University of Auckland (Aotearoa NZ)

**Brianna Caldwell** – Private practitioner (WA)

**Elena Carrabs Larocca** – University of New South Wales (NSW)

**Janelle Scully** – Australian College of Optometry (Vic)

**Jason Harley** – Private practitioner (NSW)

**Anthony Kelly** - Private practitioner (QLD)

**Rebecca Nowaczek** - Private practitioner (NSW)

**Alek Sims** – Private practitioner (SA)

**Catherine Tay** – Australian College of Optometry (Vic)

**Rebecca Tobias** – Optometry NSW/ACT

**Jacqueline Warren** – Flinders University (SA)

**Anthony Wong** – Private Practitioner (Vic)

*This Clinical Practice Guide outlines evidence-based recommendations reflecting current best practice in the management of cataract. It is intended as a general resource for optometrists and is not a formal management protocol. For further details, refer to the Appendix. All optometrists are expected to meet the standards outlined in the Entry-level Competency Standards for Optometry in Australia.<sup>1</sup> Optometry Australia supports the diversity of optometry practice models and encourages adherence to the shared Code of Conduct developed by the Australian Health Practitioner Regulation Agency.<sup>2</sup> This guide is scheduled for review in 2032.*

# 3. Executive Summary

Cataract is one of the leading cause of blindness and a major cause of visual impairment worldwide, with estimates that 17 million people were blind and over 83 million were visually impaired from cataract in 2020.<sup>3,4</sup> Beyond visual impairment, cataract can also negatively impact quality of life<sup>5</sup> by affecting a person's independence, physical activity, social engagement and the ability to perform everyday tasks.

This clinical practice guide aims to provide an overview for optometrists when providing post-surgical cataract care. This guide can be used in conjunction with [Part A](#) which focuses on pre-surgical cataract care.

A modified Delphi process<sup>6,7</sup> was undertaken to establish recommendations for this Cataract Care Clinical Practice Guide (see Appendix for details). Following this process, the working group has endorsed the following recommendations:

- Following cataract surgery
  - Appropriate post-operative reviews, as set by the operating ophthalmologist and based on the patient's presentation, are required to monitor the progress of post-operative recovery and visual rehabilitation.
  - Post-operative care is the responsibility of the operating ophthalmologist but may be delegated, after appropriate clinical handover, to optometrists in certain contexts, for example patients living in rural and remote areas and/or following uncomplicated routine cataract surgery.
- In circumstances where optometrists are co-managing post-operative cataract care, the optometrist should have access to the patient's pre-operative assessment findings and details of the surgery performed. The optometrist should also have access to dedicated emergency specialist referral pathways and ophthalmology support if needed.
- Exact procedures will be directed by local guidelines and protocols, however, processes should be put in place before any shared post-operative care is undertaken and reviewed regularly to support best practice patient-centred care, communication and information management.
- Optometrists should:
  - provide feedback to the operating ophthalmologist relating to post-operative visual acuity, refraction and surgical results as these are important for clinical governance and audit.
  - check that patients have been provided with information about what to expect during the post-operative period including the need (and timing) of follow up appointments and how to recognise any potentially significant visual changes, how to care for their eye post-operatively and details of who to contact (their ophthalmologist or optometrist) in cases of concern.
  - ensure that patients have been provided with full practice contact details for both the ophthalmologist and optometrist should they have queries, as well as an after-hours contact number for the ophthalmologist or emergency department to allow appropriate access to emergency care if required.
- Payment for any follow up appointments provided by an optometrist on behalf of the operating ophthalmologist which are not eligible for reimbursement under the Medicare Benefits Schedule, should be arranged directly with the ophthalmologist or eye clinic and these visits should not be charged to the patient.

## 3. Executive Summary (continued)

- The following tests should be performed at every post-cataract surgery visit:
  - History and symptoms, including review of postoperative medications
  - Visual function testing (unaided and, if required, pinhole vision)
  - Slit-lamp biomicroscopy examination of anterior segment
  - Intraocular pressure (IOP) measurement
- Further examination should be undertaken upon suspicion of postoperative complications. The specific tests and/or imaging indicated will depend on the issue/s that arise during the period at which the patient is being reviewed.
- In patients with an unremarkable anterior segment but reduced vision, a comprehensive fundus examination should be performed to exclude cystoid macula oedema, retinal detachment and posterior capsular opacification.
- Patients with:
  - persistent inflammation on slit-lamp examination (corneal oedema and/or anterior chamber reaction) should be examined for potential underlying causes (e.g. infectious endophthalmitis, retained fragments, intraocular lens (IOL) decentration) and managed accordingly following consultation with the operating ophthalmologist.
  - suspected endophthalmitis should be referred immediately to an ophthalmologist or local emergency department, if an ophthalmologist is not available.
  - wound leak that has resulted in a flat anterior chamber should be referred urgently to the operating ophthalmologist.
  - suspected retained lens fragmented should have gonioscopy performed by either an optometrist or ophthalmologist to look for retained lens particles
- In the event of cystoid macular oedema, optometrists should consider re-initiating, continuing or altering the topical anti-inflammatory regimen in consultation with the operating ophthalmologist, before the addition of intravitreal steroid or anti-VEGF injections which are generally reserved for recalcitrant cases.
- Optometrists should:
  - counsel patients about the importance of regular eye examinations after the standard post-operative period, to monitor for any new eye conditions, and to assess for longer term postoperative issues such as posterior capsular opacification.
  - advise patients that they can return to driving following the first post-operative review (once dilation and anaesthesia has worn off) if they meet the legal requirements and feel comfortable. However, patients with surgically induced anisometropia should be advised to delay returning to driving as they may require a longer period of adaptation.
- The possibility of significant residual anisometropia should have been discussed prior to surgery and if this causes significant visual distress, then the ophthalmologist should be contacted to see if surgery on the second eye can be expedited.
- In most cases, post-operative symptoms are transient and seldom last beyond six months requiring only reassurance and patient education. However, the small proportion of patients with intolerable and persistent symptoms should be re-referred to the operating ophthalmologist for consideration of additional treatment.

## 4. Eye drops and other medications used in and after cataract surgery

Virtually all patients undergoing cataract surgery are prescribed various pharmacological agents pre- and post-surgery to prevent complications that may threaten a successful surgical outcome (**Table 1**). However, there is little evidence to suggest an optimal regimen, leading to substantial diversity in practice patterns across the globe.

**Table 1: Pharmacological agents used during and post-cataract surgery**

MEDICATION	INDICATIONS	WHEN USED
Antibiotics (quinolones, chloramphenicol, cephalosporins)	Quinolones are used almost exclusively in the United States (US) <sup>8</sup> and many countries in Asia <sup>9</sup> while chloramphenicol is the preferred option in the United Kingdom (UK), <sup>10</sup> Australia <sup>11</sup> , and New Zealand (NZ). <sup>12</sup>	Evidence-based guidelines recommend the use of intracameral antibiotics for the prophylaxis of endophthalmitis, in preference to pre- or post-operative topical antibiotics. <sup>13</sup> This is now the standard of care in Australia. However, some patients are also given post-operative topical antibiotic eye drops though the agent, frequency, and duration of use varies considerably. <sup>14,15</sup> Clinical surveys reported that antibiotics are commonly commenced three days before (9–50%) or on the day of surgery (19–50%); they ceased between one (28–70%) to several weeks (30–68%) postoperatively.
Anti-inflammatories (topical non-steroidal (NSAID) and steroidal eye drops)	A recent meta-analysis <sup>16</sup> found NSAID monotherapy and combined NSAID/steroid therapy were both superior to steroid monotherapy but could not determine optimal drug concentrations or dosing regimens.	Postoperatively, anti-inflammatory medication regimes typically consist of NSAID and/or steroid drops for 2–6 weeks. <sup>17,18</sup>

# 5. Post cataract surgery management

Postoperative management is a crucial part in cataract surgery for enhancing rapid recovery, detecting and managing potential complications early, and optimising visual outcomes. While over 90% of modern cataract surgeries are uncomplicated,<sup>19-21</sup> the high volume of patients presenting for surgery means that even low complication rates can result in a significant number of patients suffering potentially serious complications (**Table 2** and **3**).

## 5.1 Review timelines

In cataract surgery, the postoperative period (typically up to six weeks) is when complications are most likely to arise, but it is also the time within which stable visual outcomes are attained. Therefore, follow-up visits during this period are necessary to monitor the progress of postoperative recovery and visual rehabilitation. A standard protocol for uneventful phaco cataract extraction and IOL implantation includes follow ups at 24–48 hours (postoperative day 1, POD1), 3–7 days (postoperative week 1, POW1), and 4–6 weeks (postoperative month 1, POM1). However, the Royal Australian and NZ College of Ophthalmologists (RANZCO) preferred practice patterns guide does not comment on the timing or frequency of postoperative care for cataract surgery<sup>22</sup> and review periods may vary depending on where you work and/or your relationships with local ophthalmologists as well as public vs private care. The American Academy of Ophthalmology (AAO) Preferred Practice Pattern for Cataract in the Adult Eye<sup>23</sup> recommends that the frequency of postoperative examinations are based on optimising the cataract surgery outcomes and being able to promptly recognise and manage post-operative complications. Therefore, the AAO recommends that in the case of low-risk cataract surgery with no signs or symptoms of possible complications, the patient should be seen within the first 48 hours, while patients who are functionally monocular and those at high risk of early postoperative complications should be seen within 24 hours.

It is worth emphasising that compassionate care should always remain a priority alongside the implementation of evidence-based knowledge in clinical practice. Protocols that may not be strictly medically necessary can sometimes contribute toward delivering patient-centred care, increasing medication adherence, and improving patient satisfaction and health outcomes.<sup>24</sup>

## 5.2 Assessment and imaging

The following tests should be performed at every post-cataract surgery visit:

- History and symptoms, including review of postoperative medications
- Visual function testing (unaided and pinhole VA)
- Slit-lamp biomicroscopy examination of anterior segment
- IOP measurement (with applanation tonometry if >21 mmHg)

Further examination should be undertaken upon suspicion of postoperative complications. The specific tests and/or imaging indicated will depend on the issue/s that arise during the period at which the patient is being reviewed.

## 5. Post cataract surgery management (continued)

### 5.2.1 Early postoperative period (1-14 days)

Understanding potential post-operative findings can help ensure timely diagnosis and appropriate management. It is normal for patients to report symptoms including blurry vision, foreign body sensation, dry and/or watery eyes, ocular ache and redness during this period.

Typical clinical findings during the early postoperative period include:

- Unaided vision from 6/6 to 6/18.<sup>25-27</sup>
- The CCI (usually on the temporal or superior cornea) should appear well opposed.
- Corneal oedema, to varying degrees, is common.<sup>28</sup> Supportive treatment with ocular lubricants or a hypertonic solution (5% sodium chloride eye drops or ointment)<sup>29,30</sup> may be given for symptomatic relief, but symptoms during this time are generally self-resolving and inconsequential.
- Surgically induced ptosis is common and usually resolves spontaneously within a few months. If persistent or severe, surgical intervention may be necessary.<sup>31,32</sup>
- The pupil should be round, although possibly still mid-dilated
- The IOL should be clear and well-centred relative to the capsular bag and the pupil.
- The anterior chamber may show Grade 1+ flare and Grade 1+ to 2+ cells.<sup>28</sup>
- IOP is usually mildly elevated. Figures vary widely due to differing definitions of 'IOP increase', but an IOP increase to >30 mmHg in the early postoperative period (up to 24 hours) has been reported to occur in up to 26% of healthy eyes after routine phaco surgery.<sup>33</sup> In the majority of cases, it is generally of no clinical significance and does not pose long-term risk for glaucoma.<sup>34</sup> If the IOP is >30 mmHg or the eye is painful, then oral and/or topical IOP-lowering treatments should be commenced in conjunction with the operating ophthalmologist<sup>35,36</sup> though there is no consensus on an optimal pharmacological regimen. Laser and/or surgical intervention may be required if closed angle or malignant glaucoma is suspected.
- A dilated fundus exam is not indicated at this stage unless there are specific concerns.<sup>37,38</sup>

Abnormal findings, which may require additional evaluation and management are shown in **Table 2**. Some conditions may require referral back to the operating ophthalmologist.

## 5. Post cataract surgery management (continued)

### 5.2.1 Early postoperative period (1-14 days) (continued)

**Table 2: Abnormal findings during the early post-cataract surgery period**

CONDITION	PREVALENCE/ INCIDENCE	CLINICAL CHARACTERISTICS	MANAGEMENT
Elevated IOP  (Evaluate with applanation tonometry)	An IOP increase to >30 mmHg in the early postoperative period occurs in up to 26% of healthy eyes following routine phaco surgery. <sup>33</sup>	The elevation in IOP is typically transient and self-limiting, peaking at 3–7 hours and returning to baseline levels within 24 hours postoperatively. <sup>25</sup> In most cases, it is generally of no clinical significance and does not pose a long-term risk for glaucoma. <sup>34</sup>	Glaucomatous eyes and cases where the postoperative IOP elevation is persistent or extreme may benefit from IOP-lowering treatment. Oral and/or topical IOP-lowering treatments may be commenced. <sup>35,36</sup> Laser and/or surgical intervention may be required if closed angle or malignant glaucoma is suspected.
Retained lens fragments  (Gonioscopy is indicated to look for a retained lens particle)	Incidence has been reported up to 0.51%. <sup>19,39,40</sup>	Small fragments of the lens into the anterior chamber. Retained lens fragments may occlude the anterior chamber angle and cause an elevation in IOP. It may also induce a severe inflammatory reaction.	Surgical removal of the retained lens fragments not usually indicated unless there is persistent inflammation and IOP elevation or if the fragments are large and visually significant. <sup>41</sup>
IOL decentration  (A dilated fundus examination should be performed)	Decentration of 0.5 mm can be observed in up to 10% of patients <sup>42</sup> although only 0.2–2% of cases <sup>19,43</sup> lead to noticeable visual symptoms.	Reduced VA due to increased optical aberrations and refractive changes. Corneal oedema from IOL or vitreous touch may occur which may also result in cystoid macular oedema.	Mild and nonprogressive decentration in asymptomatic patients can be managed with observation alone. Surgical repositioning or exchange may be warranted especially for IOL designs where centration is vital for good visual outcomes (e.g. toric or mfIOLs).

## 5. Post cataract surgery management (continued)

**Table 2: Abnormal findings during the early post-cataract surgery period**

CONDITION	PREVALENCE/ INCIDENCE	CLINICAL CHARACTERISTICS	MANAGEMENT
Wound leakage  (Evaluate with applanation tonometry)	Wound leak is relatively frequent immediately following phaco surgery, with reported rates of spontaneous wound leak in almost 50% of sutureless CCIs at the time of uncomplicated phaco surgery closure. <sup>44,45</sup>	Poor vision, IOP <8 mmHg, positive Seidel sign, shallow anterior chamber, corneal folds, choroidal effusion, and optic nerve oedema.	<p>The majority of wound leak cases noted in postoperative days 1 and 2 are mild and self-sealing, but leaky wounds that persist (between 0.08–1.9% of cases<sup>19,46</sup>) are concerning due to the potential for hypotony which can create a relative vacuum and increase contamination risk for endophthalmitis among other serious sequelae (e.g. hypotony maculopathy, papilloedema).</p> <p>If the anterior chamber is still formed, then wound healing can be promoted with a bandage soft contact lens<sup>47</sup> and ceasing steroid therapy after consulting with the treating ophthalmologist.</p> <p>Similarly, additional treatment with aqueous-inhibitors and cycloplegic agents may also tamponade aqueous flow through the incision, hastening wound closure but should only be commenced after discussing with the surgeon. Concurrent topical antibiotics are used for infection prophylaxis. If the anterior chamber is flat, the wound leak should be referred urgently to the operating surgeon and the wound repaired with re-suturing or adhesives.<sup>48</sup></p>
Endophthalmitis  (A dilated fundus examination should be performed)	A blinding eye infection with low incidence of only about 0.092%. <sup>49,50</sup>	It usually manifests within 3–5 days post-surgically as a red and painful eye with poor vision. In rare instances, it may exhibit a delayed onset, presenting months after cataract surgery (i.e. chronic endophthalmitis).	Immediate referral to ophthalmologist. Treatment by the ophthalmologist is indicated within 2 hours of diagnosis. Treatment for acute endophthalmitis is mostly guided by the Endophthalmitis Vitrectomy Study: <sup>51</sup> if suspected, anterior chamber paracentesis and vitreous biopsy should be performed, followed by treatment with some combination of oral, intravitreal and topical antibiotics and steroids for eyes with vision of hand movements or better. Early surgical removal of the vitreous by PPV is recommended as the first line of treatment for eyes with vision of light perception or worse.

## 5. Post cataract surgery management (continued)

### 5.2.2 Late postoperative period (2 weeks or more)

At this stage of the postoperative period, the corrected distance VA should be 6/7.5 or better.<sup>27,52</sup> If the standard suite of tests reveals a white and quiet eye, and all is otherwise well, then prescribing any necessary optical correction can be considered at this time. Patients are usually relatively asymptomatic by this point,<sup>53</sup> but some may experience a range of mild symptoms considered part of the normal visual neuroadaptation process after cataract surgery which do not require referral for ophthalmological management. One such example is colour vision changes, where patients often note a perceptual shift in colour appearance in the weeks immediately post-surgery.<sup>54,55</sup> Although patients generally do not find this a concern,<sup>56,57</sup> renormalisation of colour perception to pre-surgical levels can take up to 3 months.<sup>58</sup> Patients may also report visual symptoms such as diplopia or disorientation that are attributable to anisometropia induced by first-eye cataract surgery, but these typically disappear within a month of surgery.<sup>56,59,60</sup> Diplopia and disorientation can continue to occur if there is significant residual anisometropia which induces aniseikonia.<sup>61</sup> The possibility of this being a potential problem should have been discussed prior to surgery and if this causes significant visual distress then the ophthalmologist should be contacted to see if surgery on the second eye can be expedited. A contact lens fitted to the non-operated can sometimes bring some relief.<sup>62</sup>

Between 15-50% of patients report experiencing more bothersome symptoms like photophobia and other visual disturbances such as glare, halos, crescents, or shadows.<sup>63,64</sup> These photic phenomena result from light reflecting off the IOL onto the retina,<sup>65</sup> and are 3.5 times more likely to occur with mIOLs than monofocal IOLs.<sup>66</sup> In the majority of cases, these symptoms are transient and seldom last beyond 6 months,<sup>67,68</sup> requiring only reassurance and patient education. However, the small proportion of patients with intolerable and persistent symptoms may be considered for an IOL exchange, which has been reported to have some success in resolving these issues.<sup>69</sup>

Abnormal findings (**Table 3**) during this period include:

- Patients who demonstrate persistent inflammation on slit-lamp examination (corneal oedema and/or anterior chamber reaction) should be examined for potential underlying causes (e.g. infectious endophthalmitis, retained fragments, IOL decentration) and managed accordingly. If the inflammation is sterile, then patients should be continued on their postoperative regime of NSAID and/or steroid eye drops and followed up accordingly. If corneal epithelial bullae are present, treatment ranges from observation in mild cases to supportive therapy with hyperosmotic agents such as topical sodium chloride 5% eye drops or ointment for up to 3 months.<sup>70</sup> A bandage contact lens and topical antibiotics may be needed for infection prophylaxis if there are ruptured bullae.<sup>70</sup> Corneal collagen crosslinking<sup>71</sup> or amniotic membrane<sup>72</sup> transplantation can be performed if medical treatment is inadequate. Corneal transplant remains the gold standard treatment for bullous keratopathy.<sup>73</sup>
- Unremarkable anterior segment examination, but the pinhole VA is poorer than 6/12. A dilated examination should be performed to exclude CMO, retinal detachment and PCO. Optical coherence tomography (OCT) is the most common method for CMO detection, although fluorescein angiography is considered the gold standard. The regimen for treating CMO varies among practitioners; there is no optimal or standard protocol for what agent(s), dosage, frequency, or duration to use.

## 5. Post cataract surgery management (continued)

**Table 3: Post-operative complications within weeks of surgery**

CONDITION	PREVALENCE/INCIDENCE	CLINICAL CHARACTERISTICS	MANAGEMENT
Refractive surprise	Up to 16.5% of cataract surgeries <sup>74-76</sup> result in up to a 1.00 D miss from the intended refraction at one month postoperatively	Noticeable discrepancy between planned and final refractive outcome. There is no gold standard definition, however, clinical audits of refractive outcomes commonly evaluate proportion of refractive outcomes within $\pm 0.50$ D or $\pm 1.00$ D of intended target.	Vision enhancement with spectacle or contact lenses is the first-line option for correction in symptomatic patients. Otherwise, corneal-based surgical correction (e.g. laser in situ keratomileusis, photorefractive keratectomy) or surgical implantation of a piggyback IOL may also be considered. An IOL exchange is generally reserved for refractive surprises resulting from IOL decentration or mflOL intolerance.
Cystoid macular oedema (CMO)	Incidence ranging from 0.8–3.7% <sup>19,77-79</sup>	Believed to result from inflammatory processes precipitated by cataract surgery that disrupt the blood-retinal barrier, leaking fluid that accumulates within the macula. The average time to onset is 6–8 weeks after cataract surgery.	The majority of CMO is self-limiting, but topical anti-inflammatory therapy with NSAID and/or steroid eye drops will give a short-term benefit in visual recovery. <sup>80</sup> There is no evidence that this affects long-term outcomes. <sup>81,82</sup>  Recalcitrant cases can lead to long-term visual deterioration and chronic CMO results in vision loss in 0.02–0.12% of patients at one-year follow up. <sup>83,84</sup> Non-responsive CMO may benefit from intravitreal anti-vascular endothelial growth factor (anti-VEGF) or steroid injections, especially in patients with diabetes. <sup>85</sup>

## 5. Post cataract surgery management (continued)

**Table 3: Post-operative complications within weeks of surgery**

CONDITION	PREVALENCE/ INCIDENCE	CLINICAL CHARACTERISTICS	MANAGEMENT
Pseudophakic bullous keratopathy (PBK)	No data on the prevalence or incidence of PBK following cataract surgery	PBK is characterised by corneal endothelial decompensation that leads to stromal oedema and the formation of blister-like lesions (i.e. bullae) in the epithelium, contributing to corneal scarring and opacification. The average time to onset ranges from several months to years postoperatively. <sup>70,73,86</sup> Patients usually present with a watery and painful eye (due to ruptured epithelial bullae) with decreased vision.	Treatment ranges from observation in mild cases to supportive therapy with hyperosmotic agents. A bandage contact lens and topical antibiotics may be needed for infection prophylaxis if there are ruptured bullae. Corneal collagen crosslinking <sup>71</sup> or amniotic membrane <sup>72</sup> transplantation can be performed if medical treatment is inadequate, although these measures tend to be short-term while the patient is waiting for Descemet's Membrane Endothelial Keratoplasty (DMEK) or Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK), or less commonly, penetrating keratoplasty. Corneal transplant remains the gold standard treatment for bullous keratopathy. <sup>73</sup>
Retinal detachment	One-year incidence of postoperative RD (0.2–1.7%) <sup>87,88</sup> represents a 45-fold increase in risk compared to spontaneous RD in the general population (0.007–0.018%). <sup>89</sup>	Delayed complication of cataract surgery, mostly occurring 12–40 months postoperatively. <sup>90,91</sup> The role of the vitreous in postoperative RD remains uncertain, with both the presence <sup>91</sup> and absence <sup>90</sup> of posterior vitreous detachment having been suggested to increase the risk of developing RD after cataract surgery.	Confirmed RD warrants immediate referral and surgical repair.

## 5. Post cataract surgery management (continued)

**Table 3: Post-operative complications within weeks of surgery**

CONDITION	PREVALENCE/INCIDENCE	CLINICAL CHARACTERISTICS	MANAGEMENT
Posterior capsular opacification	Incidence rising from 11.8% within the first year to as high as 38.5% within 3 years. <sup>92,93</sup> Rates from Australian cohort studies range from 3.7% at 1 year to 8.7-38.5% at 3 years. <sup>93,94</sup>	Results from the proliferation and migration of residual lens epithelial cells in the vacated capsular bag. Eventually the cells form a translucent membrane over the intact posterior capsule that may lead to visual deficits.	Nd-YAG laser capsulotomy
Idiopathic Persistent Iritis after Cataract Surgery (IPICS)	Incidence between 0.32% and 2%. <sup>95</sup> More common in African American patients, <sup>96</sup> patient with diabetes and patients where intraoperative pupillary expansion devices have been used during surgery. <sup>97</sup>	Anterior non-granulomatous iritis. May be associated with ocular hypertension and cystoid macular oedema.	Slow tapering of topical steroids over a two-month period e.g. decreased dosing every 2 weeks for 2 months. <sup>95</sup>

### 5.2.3 Communicating with the ophthalmologist during the post-operative period

Post-operative care is the responsibility of the operating ophthalmologist but may be delegated, after appropriate clinical handover, to optometrists in certain contexts, for example patients living in rural and remote areas and/or following uncomplicated routine cataract surgery.<sup>98</sup> In these circumstances, the optometrist should ideally have access to the patient's pre-operative assessment findings and details of the surgery performed. The optometrist should also have access to dedicated emergency specialist referral pathways and ophthalmology support if needed.<sup>99</sup> Exact procedures will be directed by local guidelines and protocols, but these processes should be put in place before any shared post-operative care is undertaken and reviewed regularly to support best practice patient-centred care,<sup>100</sup> communication and information management. The optometrist should provide feedback to the operating surgeon relating to post-operative visual acuity, refraction and surgical results as these are important for clinical governance and audit.<sup>99</sup> Where possible, the use of shared electronic health records, helps to facilitate improved communication by offering quick, accurate and detailed information about the patients ophthalmic examinations at each point of care.<sup>101</sup>

Patients should also be provided with information about what to expect during the post-operative period including the need (and timing) of follow up appointments and how to recognise any potentially significant visual changes, how to care for their eye post-operatively and details of who to contact (their ophthalmologist or optometrist) in cases of concern. As the welfare and safety of the patient is paramount, all patients should be provided with information (preferably in a written format) about the level of responsibility the ophthalmologist and optometrist each assume for their care. The patient should also be provided with full practice contact details for both the ophthalmologist and optometrist should they have queries, as well as an after-hours contact number to allow appropriate access to emergency care if required. The Optometry Board of Australia provide [specific guidance](#) for optometrists working with other practitioners including the roles, responsibilities and communication channels in collaborative care of patients.

## 5. Post cataract surgery management (continued)

### 5.2.4 Patients with Anterior Segment IOLs

While posterior chamber IOLs are the choice for nearly all patients, anterior chamber IOLs may be necessary in the case of secondary IOL implantation or where there has been capsular rupture during surgery. The post-operative care of patients with anterior chamber IOLs is outside the scope of this clinical practice guide but optometrists should be aware of the increased risk of corneal decompensation, raised IOP, synechial angle closure, uveitis-glaucoma-hyphema (UGH) syndrome, IOL decentration through the iridectomy, pupillary capture and cystoid macula oedema.<sup>102,103</sup> It is likely that patients who have an anterior chamber IOL implanted during cataract surgery will remain under the care of their treating ophthalmologist due to the increased risk of complications.

### 5.3 Patients with ocular comorbidities

The presence of ocular comorbidities significantly influences the surgical risks, postoperative complications, and visual outcomes of cataract surgery.<sup>104</sup> Australia<sup>105,106</sup> and NZ-based<sup>46</sup> studies report that 26–36% of patients presenting for cataract surgery have ocular comorbidities, with the most common being age-related macular degeneration (AMD), glaucoma, and diabetic retinopathy (DR).

#### 5.3.1 Age-related macular degeneration

AMD is a common ocular comorbidity in patients presenting for cataract surgery as both these conditions share many risk factors in common, especially age. Despite conflicting evidence<sup>107–112</sup> on whether the risk of AMD progression is increased following cataract surgery, the prevailing consensus supports performing cataract surgery in patients with AMD. Studies consistently show that cataract surgery improves vision and vision-related quality of life, regardless of AMD severity.<sup>113,114</sup> For eyes with stable neovascular AMD treated with intravitreal anti-VEGF injections, undergoing cataract surgery did not negatively affect the frequency of treatment required or visual outcomes postoperatively.<sup>115–117</sup> While neovascular AMD itself is not associated with higher rates of complications in cataract surgery, several studies have reported increased incidence of PCR,<sup>118–120</sup> retained lens fragments and infectious postoperative endophthalmitis<sup>121</sup> in patients with a history of intravitreal injections which highlights the need for heightened post-cataract surgical monitoring in these patients.

#### 5.3.2 Glaucoma

Cataract surgery is widely regarded to be safe for eyes with glaucoma. Despite an increased risk of intraoperative PCR, most patients with glaucoma still experience significant improvement in vision-related quality of life after cataract surgery.<sup>122,123</sup> Moreover, several meta-analyses<sup>124–126</sup> have shown that cataract surgery provides a sustained IOP-lowering effect in glaucomatous eyes, particularly in those with narrow-angle glaucoma. There is also evidence<sup>127</sup> supporting cataract surgery as a first-line treatment for primary angle-closure glaucoma. Despite the long-term benefits on IOP control, it is well-established that acute IOP elevation frequently occurs in the early postoperative period following cataract surgery. Eyes with glaucoma are not only more prone to IOP elevation but also tend to experience larger elevations compared to non-glaucomatous eyes.<sup>128–130</sup> Post-cataract surgical care for glaucoma patients should include a post-operative day 1 review to measure IOP and address any IOP elevation, followed by close monitoring until the IOP is deemed to be controlled.

No standardised protocol for the management of early post-cataract surgery IOP elevation in glaucoma patients currently exists. However, management of post-surgical IOP fluctuations in glaucoma patients is guided by the severity of pre-existing glaucoma. In addition to resuming their glaucoma regimen in the immediate postoperative period, there is some evidence

## 5. Post cataract surgery management (continued)

to suggest that the administration of oral carbonic anhydrase inhibitors are more effective than topical alpha agonist,<sup>131</sup> prostaglandin analogues,<sup>132</sup> or beta blocker eye drops.<sup>133</sup> Therefore, common practice<sup>134–136</sup> is to prescribe 500 mg oral acetazolamide to limit the postoperative IOP elevation in glaucoma patients, though timings can differ widely and include 3–<sup>137</sup> to 6-hours postoperatively,<sup>134</sup> plus the morning after.<sup>138</sup> An AC paracentesis (otherwise known as AC decompression or wound ‘burping’) to drain aqueous fluid and/or viscoelastic agent through the paracentesis wound can also be performed by the operating ophthalmologist as an adjunctive treatment to medical therapy.<sup>130,135,139</sup> It is recommended to liaise closely with the operating ophthalmologist.

The impact of cataract surgery on eyes with previous glaucoma filtration surgery is unclear. It has long been believed that inflammation induced by the phaco procedure contributes to fibrosis which increases the risk of trabeculectomy failure,<sup>140,141</sup> though this has been disputed by some studies.<sup>142,143</sup> In light of these concerns, intensive (e.g. hourly) and prolonged (e.g. a month or longer) postoperative topical NSAID and/or steroid use has been suggested to minimise inflammation.<sup>144,145</sup> Adjunctive subconjunctival injections of 5 mg 5-Fluorouracil (5-FU) have also been proposed, but the evidence regarding its effectiveness in preserving bleb function is inconsistent.<sup>146,147</sup> Nonetheless, these patients should be followed up closely over the postoperative period, not only to monitor for IOP elevation, but also the integrity of the bleb. The bleb should be carefully evaluated for indications of bleb failure, such as excessive vascularisation, and potential obstructions at the sclerectomy site from postoperative complications like iris prolapse or retained lens fragments. Bleb massage may be performed by the treating ophthalmologist on any suspicion of early bleb failure.<sup>145</sup>

### 5.3.3 Diabetic retinopathy (DR)

Cataract surgery in patients with diabetes generally gives good visual outcomes<sup>148,149</sup> but carries an increased risk of complications compared to healthy individuals, particularly in those with longer duration and/or worse severity of the disease.<sup>78,150</sup>

CMO is the leading cause of decreased vision following cataract surgery. Patients with diabetes, even without active DR, have been shown to be at an increased risk of developing pseudophakic CMO. The risk increases with the severity of diabetes, specifically with the severity of DR.<sup>78,150</sup> There is strong evidence that the use of topical NSAID drops, either alone or in combination with topical steroid drops, reduces the likelihood of postoperative CMO,<sup>151,152</sup> so all patients with diabetes should commence a postoperative anti-inflammatory treatment regimen promptly for CMO prophylaxis.<sup>17,18</sup> In the event of CMO, continuing the anti-inflammatory regimen for three months after surgery or increasing the frequency of steroid drops<sup>84,153</sup> should be considered before the addition of intravitreal steroid or anti-VEGF injections in recalcitrant cases.<sup>85</sup>

There is also evidence to suggest an increased risk of developing or exacerbating DR<sup>154,155</sup> and/or diabetic macular oedema<sup>156,157</sup> following cataract surgery. Serial dilated fundus examinations should therefore be regularly conducted for patients with diabetes at postoperative reviews to facilitate timely intervention with anti-VEGF intravitreal injections or other anti-neovascular treatment (e.g. laser photocoagulation) as indicated. Attempts should be made to discern pseudophakic CMO from diabetic macular oedema to guide targeted treatment.<sup>158</sup> Morphological features on OCT assessment such as a thicker foveal outer nuclear layer/Henle’s layer, and solely inner nuclear layer cysts are suggestive of pseudophakic CMO, whereas the presence of microaneurysms, hard exudates, hyper-reflective foci, and additional cysts in the ganglion cell and/or retinal nerve fibre layers in the absence of subretinal fluid are suggestive of diabetic macular oedema.<sup>159</sup> Adjunctive imaging with fundus fluorescein angiography can also be performed to help identify petaloid leakage and optic disc staining classically found in CMO but not in diabetic macular oedema.<sup>160</sup>

## 5. Post cataract surgery management (continued)

### 5.3.3 Diabetic retinopathy (DR) (continued)

The rate of PCO development following cataract surgery has also been reported to be higher in patients with diabetes than in the general population.<sup>161,162</sup> This may diminish the visual improvements from cataract surgery especially in those with compromised vision from pre-existing DR. It can also obstruct visualisation of the fundus for monitoring of retinopathy. Patients should be counselled accordingly about the importance of regular monitoring of PCO to better manage these issues over the longer postoperative period.

### 5.3.4 Fuch's endothelial corneal dystrophy (FECD)

Cataracts and visually significant FECD may present concurrently in a patient's 6th decade of life<sup>163</sup> or earlier, and the presence of corneal guttae and stromal oedema have both been recognised as risk factors for post-cataract surgery corneal decompensation<sup>164</sup> and poorer surgical outcomes.<sup>165</sup> In some situations, a staged DMEK prior to cataract surgery, or triple DMEK (DMEK with phaco and posterior chamber IOL implantation) or DSAEK is recommended by the ophthalmologist depending on the presence of corneal oedema and guttae.<sup>165</sup> However, in patients with mild-moderate FECD, surgeons may proceed with cataract surgery alone.<sup>164</sup>

While phacoemulsification reduces corneal endothelial cell density by 8.5-16%,<sup>166,167</sup> there appears to be no statistically significant differences in endothelial cell density loss in eyes with low endothelial cell density (<1000 cells/mm<sup>2</sup>) compared to healthy eyes.<sup>168</sup> However, a large Swedish cohort study found that the incidence of corneal transplantation after phacoemulsification was up to 68.2 times higher for patients with corneal guttae compared to those without.<sup>169</sup> Intraoperative complications<sup>170</sup> and increased phacoemulsification time and energy<sup>171</sup> have been identified as risk factors for developing corneal endothelial failure in patients with FECD. Postoperatively, patients with FECD should be counselled that there may be increased corneal oedema which may take several weeks to months to resolve, and topical sodium chloride can be prescribed to help. If the corneal oedema fails to clear, the ophthalmologist may then consider DMEK or other corneal surgery.<sup>172</sup>

## 5.4 Managing ocular surface disorders for post-operative cataract surgery patients

A recent meta-analysis found that around a third of patients developed dry eye disease (DED) after cataract surgery, experiencing symptoms such as dryness, grittiness, or ocular fatigue.<sup>173</sup> Cataract surgery exacerbates dry eye disease through several pathophysiological mechanisms including elevating inflammatory markers, decreasing the mean goblet cell density and corneal sensory nerve damage.<sup>174</sup> It is thought that surgery itself<sup>175,176</sup> and/or the preservatives in postoperative eye drops<sup>177,178</sup> contribute to ocular surface inflammation and tear film instability, both of which can temporarily cause DED. Post-operative management of dry eye should include tapering and discontinuing of topical ocular medications when they are no longer needed and the addition of ocular lubricants or cyclosporin 0.05%,<sup>179</sup> if required. If the problem persists, the surgeon may switch the patient to non-preserved steroid drops supplemented by non-preserved ocular lubricants. Though symptoms of DED tend to resolve within a month,<sup>180</sup> some patients may experience DED symptoms beyond 3 months postoperatively.<sup>181,182</sup> However, the reported severity of symptoms is generally mild<sup>183,184</sup> and is manageable simply with ocular lubricants and/or punctal plugs.

## 6. Refractive management of the post-surgical cataract patient

Patients should be advised that they can drive following surgery (once the eye patch has been removed and the anaesthetic worn off) if they feel comfortable and meet the legal requirements, although patients with surgically induced anisometropia should be advised that this may cause problems with judging distances and speed and may require a longer period of adaptation, before driving can recommence.<sup>185</sup> Despite numerous studies reporting that refractive stabilisation is achieved within 1-2 week of uneventful phaco cataract surgery regardless of age, gender, or axial length,<sup>186-190</sup> a waiting period of 4-8 weeks (based on recovery times following conventional large incision cataract surgery<sup>191</sup>) remains the standard recommendation before prescribing spectacles. This delay has been questioned not only for being unnecessary but also for potentially diminishing patients' vision-related quality of life during the recovery phase.<sup>57,192</sup> Reducing to a 1-2 week interval, in most cases of uncomplicated surgery, before prescribing spectacles would allow patients to achieve clearer vision sooner and also ease the process of re-adapting to spectacle wear post-surgery.<sup>56</sup> A small number of patients show highly unstable cylindrical corrections at one week,<sup>193</sup> and refractive instability is more common in patients where the refractive target has been missed by  $\geq 1.00$  D,<sup>194</sup> and in these cases waiting for refractive stabilisation is indicated.

Many patients will tolerate small amounts ( $\pm 0.50$  D) of residual refractive error, particularly if they have received EDOF or mflOLs,<sup>195</sup> or if there is a low myopic refractive error providing an expanded range of intermediate and/or near vision. Small amounts of residual astigmatism, particularly, with-the-rule astigmatism may be better tolerated by patients as it can enhance depth of focus and improve uncorrected near vision.<sup>196</sup> However, in cases of more significant post-surgical astigmatic refractive errors, assessment with either keratometry or topography is warranted to identify corneal toricity versus IOL tilt.<sup>196</sup>

### 6.1 Postoperative refraction for premium IOLs

Assessing residual refractive error after cataract surgery is straightforward in eyes implanted with monofocal (spherical or toric) IOLs. However, conventional subjective refraction has been shown to have limitations in the case of eyes with premium implants such as mflOLs or EDOF IOLs<sup>197,198</sup> likely as a consequence of light being distributed across multiple focal points. To address this, various methods have been proposed for determining the optimal endpoint for such IOLs. Some approaches are relatively simple, such as selecting the maximum plus power that conserves maximum distance VA,<sup>199</sup> or the spherical power that corresponds to the midpoint of the defocus interval for maximum distance VA.<sup>197</sup> It should be noted that evidence supporting the reliability of standard techniques such as the duochrome and cross-cylinder tests for verifying the spherical power endpoint in mflOLs and EDOF IOLs is lacking and should be used with caution. To date, a standardised, evidence-based subjective refraction protocol specific to mflOLs and EDOF IOLs has yet to be established. Nonetheless, the general consensus is that type/model of IOL and the preoperative refractive target are important factors to consider when evaluating the postoperative refractive outcome.

## 6. Refractive management of the post-surgical cataract patient (continued)

### 6.1 Postoperative refraction for premium IOLs (continued)

Mohammadi et al.<sup>200</sup> recommend conducting subjective refraction under high mesopic or photopic conditions to address vision instability in mIOLs and EDOF IOLs under varying light levels. They suggest starting with the keratometry values and correcting astigmatism first, followed by the addition of plus spherical power corresponding to half the cylinder power to keep the circle of least confusion constant. The spherical power is then fine-tuned using minus lenses for the right (distance) eye and plus lenses for the left (near) eye, to create partial monovision. The endpoint is achieved when binocular VA reaches 6/6 for distance and J1 for near at 40 cm. Rodríguez-Vallejo et al.<sup>201</sup> suggest conducting subjective refraction under photopic conditions (~100 lux) using the objective refraction as the starting point<sup>202</sup> From the autorefraction or retinoscopy result, +1.00 DS is added to the prescription and then negative spherical power in 0.25 DS steps is incrementally added until the maximum plus power yielding the best distance VA is identified. This method is essential to confirm the improvements in distance VA lie within the expectations set by the IOL's defocus curve to prevent over-minusing, which could significantly degrade the near VA.<sup>203-205</sup>

Sub-optimal vision post-refraction should prompt a referral back to the operating ophthalmologist for further evaluation and possibly further intervention.

## 7. Billing for post-cataract surgical follow-up

The Medicare rebate paid to the ophthalmologist for cataract surgery includes payment for normal post-operative care. Therefore, payment for any follow up appointments provided by an optometrist on behalf of the operating surgeon should be arranged directly with the ophthalmologist or eye clinic and these visits should not be charged to the patient. The amount and duration of the aftercare period may vary but includes all visits until the patient has recovered from the operation.

The first visit for which an optometrist can charge a Medicare rebate for is generally the visit at which a prescription for spectacles or contact lenses is written.

For more information regarding appropriate item use, refer to the online [Medicare Benefits Schedule](#).

When considering Medicare billing, an optometrist should consider whether they:

1. Have performed a clinically necessary or relevant service;
2. Met the conditions of the Medicare Benefits Schedule (MBS) item descriptor;
3. Could justify the services provided to a panel of their peers.

# 8. Appendix

## 8.1 Scope and purpose

The purpose of this clinical practice guide is to aid clinicians in their management of cataract in the pre- and post-operative phases with the intent that all patients with cataract will receive a high standard of care from their optometrist.

The literature review undertaken by AL in 2024 aimed to:

- Understand the present best-practice optometry management of patients with cataract pre- and post-operatively as supported by evidence and consensus guidelines;
- Assist optometrists in providing appropriate follow-up care post-operatively to their patients who have received cataract surgery; and
- Determine which post-surgical pathologies and complications require surgical intervention or care from another healthcare practitioner.

This was framed in the Australian clinical and practice context.

## 8.2 Stakeholder involvement

An expert working group was established via a combination of direct invitation and a call for expressions of interest from Optometry Australia members. A rubric was created to ensure a breadth of expertise was included in the Cataract Care CPG working group – from those who worked in academia, private (optometry and/or ophthalmology) practice, corporate practice, hospital-based and public health care. Representation from across the country was also sought.

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) were also invited to provide feedback on the final draft of the clinical practice guide. Their feedback was reviewed in detail, and amendments were made where considered appropriate.

## 8.3 Development

The process for development of recommendations was undertaken via a modified Delphi process. Following a literature review (AL) in 2024 and a first working group meeting, a list of recommendations was established (NA). These recommendations went through 2 iterative rounds of voting by 12 working group members, excluding KH and NA. Feedback was provided to Delphi participants after each round of voting, and a final working group meeting was held to discuss any contentious recommendations. Following this meeting, a third round of voting was undertaken to improve the clarity of some recommendations. The final recommendations are included in the executive summary.

The working group considered the potential health benefits and risks for patients with cataract when voting on all recommendations. They also considered the potential resource implications of applying the recommendations (e.g., equipment required) on optometrists and the health system more broadly.

The clinical practice guide will be reviewed as new evidence becomes available, or in a maximum of 7 years' time.

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