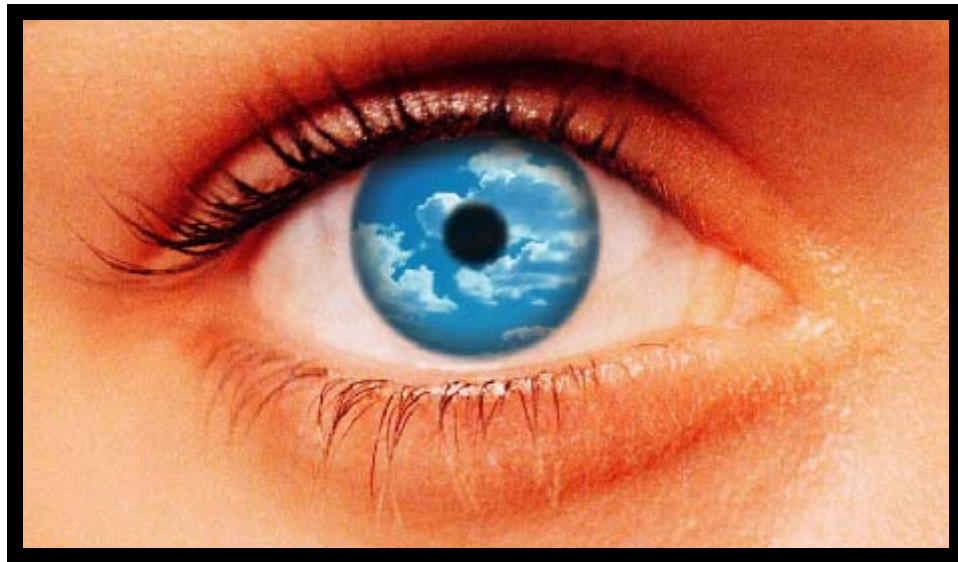


# ***CATARACT MD***

**V I S I O N**

*BRINGING CLARITY BACK TO LIFE*

## **SURGICAL INFORMATION PACKAGE**



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**[www.cataractmd.ca](http://www.cataractmd.ca)**

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## WELCOME TO CATARACT MD

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Thank you for choosing CATARACT MD for your vision correction. We appreciate the fact that this is an extremely important decision that could alter your life immeasurably. Like many patients, you may be feeling excited about the prospect of being freed from dependency on glasses or contacts, but at this point, you may also have questions about the procedure that you will be undergoing. In this package, we have attempted to answer some of those questions, providing you with information about the benefits, potential complications, and steps of the procedure.



You may also have questions about CATARACT MD itself. Our mission, put simply, is to deliver premium quality care, using the highest surgical standards and the latest technology, at an affordable price to you, our patient. Following these standards, our highly trained and expert surgeons have already performed more than 10,000 procedures including one of three procedures:

- RLE (Refractive Lens Exchange or sometimes called Clear Lens Extraction, or CLE)
- Phakic (IOL) Implantation (Phakic Intraocular Lens Implantation or sometimes called Intraocular Contact Lens Implantation)
- CAT (Cataract surgery)

RLE, Phakic IOL Implantation and CAT are referred to, collectively, as the “procedure” in the following materials, and are briefly described below.

**RLE** and **CAT** are forms of outpatient lens surgery in which a surgeon starts by anesthetizing and entering the anterior chamber of the eye through a microscopic port incision in the clear membrane, called the cornea of the eye. The surgeon then uses a specialized and precise instrument, called a phacoemulsifier, to remove the lens of the eye. The lens is then replaced with an artificial lens with a power calculated based on the pre-operative determination of the power of your eye. These measurements are usually in agreement with recent prescriptions for your glasses and/or contact lenses. Within minutes, natural forces seal the microincision in the cornea. RLE and CAT can be used to correct nearsightedness (myopia), farsightedness (hyperopia), lens opacities, and, in certain cases, when special lenses are used, some astigmatism and presbyopia. RLE is recommended for patients over 45 years of age.



**Phakic IOL Implantation** is a form of outpatient surgery in which a surgeon, instead of removing the natural lens in the eye, adds an additional lens in front of it – entering the eye in the same way as RLE and CAT. This technique is usually used for people who are under age 40 and whose natural lens is still capable of a wide range of accommodation. The procedure is used to correct nearsightedness (myopia), farsightedness (hyperopia) and, in certain cases, when special lenses are used, some astigmatism.

In the following pages, you will find further details about the procedures, as well as information about the conditions that cause you to require visual correction, and the steps to follow before and after your procedure. Please read all of the material in this package carefully. Remember that we provide this package in addition to, but not as a replacement for, discussions with your surgeon and optometrist. In addition to speaking with the surgeon and optometrist, you may find it helpful to consult our Web site, at [www.cataractmd.ca](http://www.cataractmd.ca), or to contact one of our consultants at (888) 887-9888 if you have any other questions.

## HOW THE EYE WORKS

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RLE and Phakic IOL Implantation are performed on or around the natural lens of the eye. The globe of the eye possesses a transparent wall at the front called the cornea, which acts as the major focusing part of the eye (75%). The remaining focusing power of the eye is mostly in the lens of the eye (20%) and the tear film (5%). Consequently, changing the lens of the eye for one of a different power produces a permanent change in its focusing power.



## REFRACTIVE ERRORS

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Before undergoing the procedure, it is helpful to understand how the eye works. The eye is like a camera. The cornea is the clear, dome-shaped window that forms the front wall of the eye. The retina is the light-sensitive tissue in the back of the eye that connects to the brain and acts like the film in a camera. The cornea at the front of the eye acts as a lens that focuses light onto the retina, producing an image on the retina that gets transmitted to the brain and interpreted as vision. The combination of the curve of the cornea and the power of the lens in the eye determines the focusing power and whether the incoming light rays from distant objects focus directly onto the retina. When light does not focus directly on the retina, the eye has a refractive error. This means that with the appropriate “refractive correction” lens, incoming light rays become focused onto the retina producing clear vision.

### **Myopia (Nearsightedness)**

In myopia, the eye is longer than normal, preventing light rays from focusing directly on the retina. The light rays come together at a point in front of the retina, and are out of focus on the retina. Distant objects are blurred, while nearby objects can be clear.

### **Hyperopia (Farsightedness)**

In hyperopia, the eye is shorter than normal. The light rays come together at a point behind the retina, and are therefore out of focus on the retina. Nearby objects can appear blurry, while distant objects are clearer. Very farsighted patients will report that even distant objects appear blurry.

### **Astigmatism**

In the normal eye, the cornea is curved the same in the horizontal and vertical directions, like a baseball. When light rays hit the cornea, they focus at a single point. In astigmatism, the curve of the cornea is not the same in the horizontal and vertical directions. The cornea looks like a football, with a steep curve on one side and a flat surface on the other. As a result, light rays entering the cornea do not focus at a single point, instead causing distorted vision. Many people with myopia or hyperopia have some degree of astigmatism.

In all of these conditions, the person needs some type of corrective lens, such as glasses or contact lenses, to focus the light properly.

## CATARACTS

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### What is a cataract?

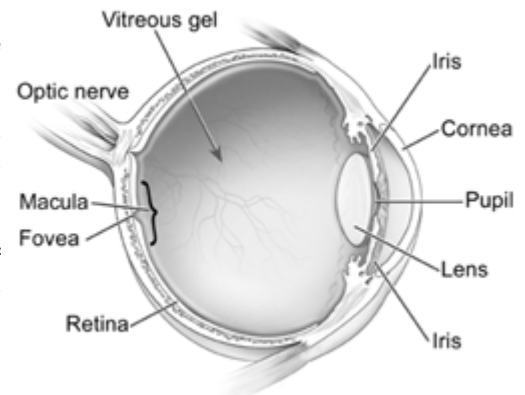
A cataract is a clouding of the lens in the eye that affects vision. Most cataracts are related to aging. Cataracts are very common in older people. By age 80, more than half of all North Americans either have a cataract or have had cataract surgery. A cataract can occur in either or both eyes. It cannot spread from one eye to the other.

### What is the lens?

The lens is a clear part of the eye that helps to focus light, or an image, on the retina. The retina is the light-sensitive tissue at the back of the eye.

In a normal eye, light passes through the transparent lens to the retina. Once it reaches the retina, light is changed into nerve signals that are sent to the brain.

The lens must be clear for the retina to receive a sharp image. If the lens is cloudy from a cataract, the image you see will be blurred.



### How do cataracts develop?

Age-related cataracts develop in two ways:

#### 1. Clumps of protein reduce the sharpness of the image reaching the retina.

The lens consists mostly of water and protein. When the protein clumps up, it clouds the lens and reduces the light that reaches the retina. The clouding may become severe enough to cause blurred vision. Most age-related cataracts develop from protein clumpings.

When a cataract is small, the cloudiness affects only a small part of the lens. You may not notice any changes in your vision. Cataracts tend to "grow" slowly, so vision gets worse gradually. Over time, the cloudy area in the lens may get larger, and the cataract may increase in size. Seeing may become more difficult. Your vision may get duller or blurrier.

#### 2. The clear lens slowly changes to a yellowish/brownish color, adding a brownish tint to vision.

As the clear lens slowly colors with age, your vision gradually may acquire a brownish shade. At first, the amount of tinting may be small and may not cause a vision problem. Over time, increased tinting may make it more difficult to read and perform other routine activities. This gradual change in the amount of tinting does not affect the sharpness of the image transmitted to the retina.

If you have advanced lens discoloration, you may not be able to identify blues and purples. You may be wearing what you believe to be a pair of black socks, only to find out from friends that you are wearing purple socks.

## Who is at risk for cataract?

The risk of cataract increases as you get older. Other risk factors for cataract include:

- Certain diseases (for example, diabetes).
- Personal behavior (smoking, alcohol use).
- The environment (prolonged exposure to ultraviolet sunlight).

## What are the symptoms of a cataract?

The most common symptoms of a cataract are:

- Cloudy or blurry vision.
- Colors seem faded.
- Glare. Headlights, lamps, or sunlight may appear too bright. A halo may appear around lights.
- Poor night vision.
- Double vision or multiple images in one eye. (This symptom may clear as the cataract gets larger.)
- Frequent prescription changes in your eyeglasses or contact lenses.

These symptoms also can be a sign of other eye problems. If you have any of these symptoms, check with your Ophthalmologist.

## Are there other types of cataract?

Yes. Although most cataracts are related to aging, there are other types of cataract:

- **Secondary cataract.** Cataracts can form after surgery for other eye problems, such as glaucoma. Cataracts also can develop in people who have other health problems, such as diabetes. Cataracts are sometimes linked to steroid use.
- **Traumatic cataract.** Cataracts can develop after an eye injury, sometimes years later.
- **Congenital cataract.** Some babies are born with cataracts or develop them in childhood, often in both eyes. These cataracts may be so small that they do not affect vision. If they do, the lenses may need to be removed.
- **Radiation cataract.** Cataracts can develop after exposure to some types of radiation.



Normal vision



The same scene as viewed by  
a person with cataract

## How is a cataract detected?

Cataract is detected through a comprehensive eye exam that consists of various tests, such as:

- **Visual acuity test.** This eye chart test measures how well you see at various distances.
- **Dilated eye exam.** Drops are placed in your eyes to widen, or dilate, the pupils. Your eye care professional uses a special magnifying lens to examine your retina and optic nerve for signs of damage and other eye problems. After the exam, your close-up vision may remain blurred for several hours.
- **Tonometry.** An instrument measures the pressure inside the eye. Numbing drops may be applied to your eye for this test.

Your Ophthalmologist also may do other tests to learn more about the structure and health of your eye.

## How is a cataract treated?

The symptoms of early cataract may be improved with new eyeglasses, brighter lighting, anti-glare sunglasses, or magnifying lenses. If these measures do not help, surgery is the only effective treatment. Surgery involves removing the cloudy lens and replacing it with an artificial lens.

**A cataract needs to be removed only when vision loss interferes with your everyday activities, such as driving, reading, or watching TV.** You and your eye care professional can make this decision together. Once you understand the benefits and risks of surgery, you can make an informed decision about whether cataract surgery is right for you.

Sometimes a cataract should be removed even if it does not cause problems with your vision. For example, a cataract should be removed if it prevents examination or treatment of another eye problem, such as age-related macular degeneration or diabetic retinopathy.

If you have cataracts in both eyes that require surgery, the surgery will usually be performed on each eye at separate times.

## WHAT HAPPENS DURING THE PROCEDURE?

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The procedure is performed on an outpatient basis at our CATARACT MD clinic. The procedure generally requires twenty minutes of operating room time, during which phacoemulsification is used for a few minutes on each eye, but the actual duration of the procedure may vary according to the hardness of your natural lens. If you would prefer to take a mild sedative, such as Valium or Ativan, to help you relax during the procedure, please inquire about this possibility during your pre-operative assessment.

### RLE and CAT

RLE is a surgical procedure to replace the natural lens of the eye with an artificial one of a preselected power. The principle is that in a myopic eye, the cornea and lens combination is too powerful for the length of the eyeball so an image is out of focus. Conversely, for long-sighted patients there isn't enough focusing power. The artificial lens is calculated using a sophisticated device to provide the correct focusing power for the length of the eye. It is effectively exactly the same procedure that patients having Cataract surgery undergo. In that situation, the patient's lens is cloudy and being replaced for that reason rather than spectacle error.

Before the procedure begins, you will be given eye drops to dilate your pupil and numb your eye. Essentially, the procedure is identical to a cataract operation. A tiny incision is made in the cornea, and an ultrasonic probe is used to soften the lens and remove it. This is done through an incision that is so small it doesn't need any stitches. The technique is known as "Phacoemulsification" (from the Greek: Phakos = lens, and Latin: emulsification = to turn into milk!). This is the most modern way to perform lens surgery. The laser is not used for surgery. There are some machines that use a laser to remove the lens, but they are in development, and not widely used. An Intra-ocular lens implant (or I.O.L) is then inserted, folded, into the space left where the natural lens used to be. The lens membrane, or capsular bag, is left intact to provide support for the new lens.

The RLE and CAT procedures offer extremely fast recovery: within hours of the surgery, the incision has usually begun to heal. Most patients are able to resume day-to-day activities just 24 hours after the surgery. Your surgeon may prescribe eye drops for one or two weeks after surgery. You must also wear eye shields at night to prevent rubbing your eyes for the first week.

### Phakic IOL Implantation

The Phakic IOL Implantation technique may be suitable for some younger (less than 40 years) people with relatively high refractive error, usually those with marked myopia. Candidates are usually those patients who have considered the laser, but have been deemed as having too great a refractive error. The technique involves implanting a thin flexible lens composed of special material between the patient's natural lens and the iris. The patient's own natural lens is not disturbed, so in a younger patient (40 years of age or less) they should retain the ability to read without glasses.

The procedures are performed as a day case under local anesthesia. They require a proper Operating Theatre with all the usual facilities to ensure sterility.

For the first few days after either procedure, you may experience some mild degree of discomfort. During this time, your vision may be blurry and/or may fluctuate between being clear and being blurry. The final outcomes of Phakic IOL Implantation, RLE and CAT are very similar; the difference is the maintenance of the natural accommodation of the lens in Phakic IOL Implantation.

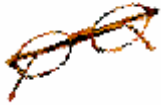
**You should not drive for at least twenty-four (24) hours after either procedure** and in no event should you drive until your vision is clear.

With your consent, the procedure may be video taped for clinical purposes and may also be photographed for research and academic purposes. These recordings are not available for patient use or reproduction.

## POTENTIAL BENEFITS

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### Reduced dependence on contacts and glasses!



There are numerous potential benefits for patients who undergo RLE, Phakic IOL Implantation or CAT. Almost all of these advantages are associated with reduced dependence on eyeglasses and/or contact lenses. While the use of eyeglasses and/or contact lenses can be an effective method of correcting refractive error, it is also a method that can place restrictions on normal, everyday activities.



Reduced dependence on corrective lenses can result in considerably more freedom for patients with active lifestyles. Many recreational activities, such as water sports or contact sports, tend to be much more enjoyable when the necessity of wearing glasses or contacts is removed. In some cases, patients choose intraocular surgery for professional purposes, rather than recreational ones. Corrective lenses are not permitted in all fields of employment.

For contact lens wearers, intraocular surgery can also eliminate the time and effort involved in cleaning, removing and replacing lenses. In addition, over time, the costs associated with maintaining and replacing corrective lenses can be prohibitive. Many eyeglass wearers also cite cosmetic or aesthetic reasons for wanting to undergo the procedure.



The reasons for contemplating refractive surgery will be different for every individual. For those who have required corrective lenses throughout most of their lives, the simple prospect of being able to drive without wearing glasses or contacts, or of being able to wake up and see without putting on glasses or contacts, may be sufficient reason in itself. The potential benefits, as well as the potential complications, can vary, and should be considered carefully. The patient is the only person who can decide whether the benefits of intraocular surgery outweigh the risks.

## **SPECIFIC ADVANTAGES OF RLE/PHAKIC IOL IMPLANTATION VS. LASER VISION CORRECTION**

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### **It doesn't interfere with corneal shape**

This is the most important aspect of RLE. The human cornea has a very special shape – steep in the centre and flat towards the edge. It's like that for a reason; humans have evolved as predators with excellent straight ahead vision, as opposed to prey animals such as rabbits that have good peripheral vision at the expense of central detailed vision. Laser treatments alter the shape of the cornea, and make the cornea flat in the centre and steep at the edge when used to treat myopia, and steeper in the center when used to treat hyperopia. Beyond a certain level of treatment (about -12 Diopters for myopia and +4 Diopters for hyperopia but varies from patient to patient) this change in shape can begin to cause some difficulties with night vision and demanding detailed tasks. RLE does not affect the cornea at all, so visual potential after surgery is not affected by the level of treatment and is usually excellent.

### **It's a familiar technique which is frequently performed**

This is another big plus. The techniques involved are identical to cataract surgery which is an extremely frequently performed operation. The techniques and technology behind the surgery have evolved to a very sophisticated level over the years. Modern lens measurement techniques are available to enable a high degree of accuracy when calculating the power of the lens implant.

### **It can be used even if your cornea is too thin for laser vision correction**

This can happen when you have a particularly high myopic prescription.

### **It can be used when laser vision correction may not work as well**

Laser correction can not safely correct higher levels of hyperopia (generally 4D or more). RLE or Phakic IOL Implantation can be used for theoretically any level of hyperopia.

## **SPECIFIC DISADVANTAGES OF RLE/PHAKIC IOL IMPLANTATION VS. LASER VISION CORRECTION**

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### **It is an intraocular procedure**

Lens surgery is a not a superficial procedure and therefore carries some additional risks and additional cost. However, with today's modern procedure the risks are low and the success rate is over 99%.

### **Not capable of fine tuning alone**

We use the most advanced means of measuring for lens power (a device called the IOL Master) and its accuracy is very high but RLE and Phakic IOL Implantation by their nature are designed to treat large errors and there may still be small residual refractive errors, which we will correct if necessary easily within 3 months after the operation using laser vision correction which can be used for fine tuning.

### **Reading glasses are necessary post-operatively after RLE**

In RLE because we remove the natural flexible lens in the eye patients lose their accommodative ability after the surgery. It may be possible to insert either a multifocal type lens of an accommodative type allowing you to preserve some accommodative ability.

## ARE THERE ALTERNATIVES?

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RLE and Phakic IOL Implantation are elective surgical procedures. There is no medical condition or emergency condition requiring that you have RLE or Phakic IOL Implantation. They do not correct all types of refractive error and are not for everyone. We cannot guarantee that RLE or Phakic IOL Implantation will improve your vision, or that it will eliminate your need for glasses or contact lenses. After the procedure, you may still need glasses or contact lenses for some purposes, either immediately after the procedure or years later.

There are alternative methods of correction available, including the following:

### Eyeglasses

Eyeglasses are safe, relatively inexpensive and most people can wear them reasonably well. However, depending on the nature of the correction, the lenses may be thick, may reduce or increase the size of the visual image, and may impair peripheral vision. Also, nearsighted patients usually begin to experience the need for reading glasses as they age. The most common solution to this problem is bifocal lenses, which can be suitable for some patients, but can create a difficult transition for others.



### Contact Lenses



Contact lenses are another non-surgical alternative. Contact lenses come in a variety of materials, and comfort, effectiveness, and ease of use varies. Since contact lenses rest directly on the cornea, not everyone is able to tolerate them. If fitted and used properly, contact lenses are effective, relatively safe and easy to use. Complications arising from the use of contact lenses include allergic reactions, infections, scratches, ulcers, or other injuries to the cornea.

## WHO IS ELIGIBLE FOR A PROCEDURE?

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To be eligible for RLE, CAT or Phakic IOL Implantation, you must be between 21 and 80 years of age. Other factors, such as the general health of your eye, will be examined at the pre-operative assessment.



Certain conditions may make you a questionable candidate for the procedure or cause additional risks or complications. If you have or may have any of these conditions, we suggest that you discuss them thoroughly with your optometrist and your surgeon, as they could interfere with the healing process and require additional care. Those conditions include, but are not limited to:

- Eye inflammation or infection
- Severely dry eyes
- Certain rheumatological conditions (e.g. lupus, rheumatoid arthritis)
- Excessive corneal disease or scarring
- Degenerative disease of the cornea
- Uncontrolled diabetes
- Hepatitis C
- Inadequate corneal tissue
- Use of certain drugs
- Pregnancy
- HIV (Human Immunodeficiency Virus)

## FINANCIAL RESPONSIBILITY

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Our Centre charges a single combined fee for its services and the fees of your CATARACT MD surgeon and your CATARACT MD optometrist (the "Centre Fee"). Keep in mind that only a few health insurance organizations pay for RLE or for Phakic IOL Implantation, both of which are classified as elective procedures. The Centre Fee covers certain pre-operative and post-operative services. Post-operative services include a 24-hour check and assessments at one week, one month and three months, with additional visits required for Phakic IOL Implantation. If you obtain some of your post-operative care elsewhere than CATARACT MD, you will not receive a partial refund of your Centre Fee, and you will be responsible for arranging and paying the costs of that post-operative care. There is an additional fee for your one year post-operative appointment. Patients may be asked to leave a deposit when they book their appointment for surgery. Additional charges may apply for weekend post-operative exams.

The Centre Fee does not cover the cost of glasses, contact lenses, plugs for temporary post-operative dry eye, certain medications, or services provided at other facilities. Please note that you will be responsible for paying the remaining balance for surgery on the day of the procedure. For your convenience, payment may be made by Visa, MasterCard, debit card, certified cheque or cash. We do not accept personal cheques.

CATARACT MD offers financing to its Canadian patients. Should you require financing, this must be done before the day of surgery. The form may be found on the CATARACT MD Web site ([www.cataractmd.ca](http://www.cataractmd.ca)) or at the clinic.

## THE ROLE OF THE MEDICAL TEAM

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Your surgeon (ophthalmologist) and your optometrist are trained health care professionals experienced in the pre-operative, operative and post-operative management of RLE, CAT and Phakic IOL Implantation. The Clinical Assistants are extensively trained in the diagnosis and treatment of refractive eye problems, and/or ophthalmic medical assisting, and act under the supervision of the ophthalmologist.

### Surgeon

Your ocular surgeon has a medical degree and is highly experienced in the medical and surgical management of refractive errors and eye diseases. In addition to four years of college, your surgeon has spent four years in medical school, followed by a medical or surgical internship. Your surgeon has also completed a three or four year residency in ophthalmology and has undergone intraocular surgical certification for use of the phacoemulsification system.

### Optometrist

Your optometrist has attended 4 to 5 years of optometry school and has attained a Doctor of Optometry degree, is highly trained in diagnosing and treating refractive errors by non-surgical means, and has experience in providing post-operative care for RLE, CAT and Phakic IOL Implantation. Your optometrist, who will communicate closely with your surgeon to ensure the best possible surgical results, may be able to assume responsibility for your care as early as the day following surgery.

## INFORMED CONSENT

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You have the right to consent to or to refuse any treatment or procedure at any time prior to its performance. Consent is a process that involves many steps, involving the patient, the surgeon and the Centre staff. Please remember that the staff and the surgeon are available to help address your concerns, so do not hesitate to ask questions.

### Steps of the Consent Process

#### Optometrist

During your pre-operative evaluation, an optometrist will examine your eyes to determine if you are a candidate for RLE, CAT or Phakic IOL Implantation, according to criteria set by the surgeon. An optometrist will provide you with an explanation of the procedure, the risks, complications and expected benefits, the alternatives, if any, and any particular conditions that might affect your decision to undergo the procedure.

#### Counselor

Before your surgery, a Centre staff member will ensure that you have a copy of the Surgical Information Package and the Consent Form(s). You should review the Surgical Information Package and the Counsellor will address any questions that you have, review the Consent Form(s) with you, and complete much of the information on the Form(s) in preparation for the surgeon's signing and witnessing your signature.

#### Surgeon

To assist you in making an informed decision, your surgeon will review with you the risks and complications specific to you. Please ensure that your surgeon is aware if you have unanswered questions or if you do not understand any topic. Your surgeon will also provide you with a specific post-operative plan, to which you will also need to consent. Your surgeon is not required to explain risks that are extremely remote, or those that your surgeon does not know about, even if these become known at a later time. Your surgeon will provide you with information that would be material for a reasonable person in your position to use in deciding whether or not to undergo the procedure.

#### Patient Consent Form

If, after reading this material and speaking with the counselor, optometrist, eye care professional, and your surgeon, you decide to undergo the procedure, you will need to sign the Patient Consent Form(s), indicating that you have been advised of the nature of the procedure, its risks, benefits and alternatives, and that you are making an informed decision to undergo the procedure. You can request a copy of your Consent Form(s).

## OUR COMMITMENT TO YOUR VISION

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At CATARACT MD, we stand behind your distance vision results. We have confidence in our surgeons and in the stability of our patient's results over the long-term. We call it our Vision Commitment Program, and it is offered to all patients who undergo surgery. CATARACT MD will cover the cost of any laser fine tuning or touch up of the result to attain a prescription of 1 diopter or less, which is normally the minimum visual acuteness required to drive without contact lenses. The CATARACT MD vision commitment is offered to all patients that undergo intraocular correction at our facility and is included in the cost of surgery.



## POTENTIAL COMPLICATIONS

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Like any surgical procedure, RLE, CAT and Phakic IOL Implantation involve risks of unsuccessful results, complications, or serious injury, from unknown and unforeseen causes. Although the vast majority of our patients experience a significant improvement in their vision, neither your surgeon, nor your optometrist, nor the Centre nor its staff, can promise or guarantee that the procedure will be 100% effective or make your vision better than it was before the procedure.

There is a slight possibility that the procedure or a complication arising from the procedure could cause your vision to be blurred, doubled, distorted, or to have halos or other disturbances, and that these would NOT be correctable with glasses or contact lenses. In the event this should occur, your surgeon will discuss and offer you advice on further treatment, which may involve medications or more surgery. If the outcome cannot be corrected by medications, lens exchange or external surface corneal surgery, the only way of restoring the vision may be a corneal transplant.

During your pre-operative examination, the likely outcomes will be conveyed to you based on your particular situation. Although it is not possible to list every potential risk or complication that may result from RLE, CAT or Phakic IOL Implantation, many of these are described below. They are listed in the order of intraoperative complications (which happen during the surgery) and post-operative complications that happen days, weeks, months or even years after the surgery.

### **Tearing of the lens capsule (RLE only)**

One of the more common complications that could occur during surgery is tearing of the lens capsule; this thin cellophane-like membrane is left intact to support the new lens. It is very delicate, and sometimes is torn during surgery. This can make lens implantation more difficult, and can disturb the vitreous gel inside the eye. The risk of this happening is approximately 1 in 100.

### **Bleeding**

The technical term for one of the more serious possible complications in this surgery is a "choroidal hemorrhage" and it occurs rarely in certain patients who have fragile blood vessels in the back part of the eye, which bleed due to the sudden drop in pressure when the eye is entered. This can result in loss of vision and possibly permanent blindness of the eye (risk is approximately 1 in 20,000).

### **Vitreous leak (RLE and CAT only)**

Sometimes when there has been a tear in the capsule of the lens and in certain people who have a pre-existing weak or floppy capsular bag some of the gel or jelly in the eye may be disturbed and may leak forward into the anterior chamber of the eye. In and of itself this is not disturbing but it can lead to an increased risk of some of the below post-operative complications, particularly retinal detachment and retinal swelling. If the vitreous leak is severe it may also sometimes lead to necessary further surgical interventions such as vitrectomy (where the gel in the eye is removed and replaced) which are often performed by a retinal surgery specialist. (Risk is approximately about 1 in 200 for some vitreous leak or loss to occur and 1 in 1000 or less for it to lead to serious visual loss).

### **Dropped lens material (RLE and CAT only)**

Sometimes also when there is a capsular bag tear some of the lens material we are trying to remove may fall back into the vitreous gel in the back of the eye and if it is a small amount it may be left behind and dissolve naturally by itself but if a large amount it may also need further surgical interventions such as a vitrectomy (where the gel in the eye is removed and replaced) which are often performed by a retinal surgery specialist. (Risk is approximately about 1 in 500 for some dropped lens material and 1 in 4000 or less for it to lead to serious visual loss).

### **Iris trauma / prolapse**

The colored part of the eye may rarely be traumatized during the procedure and sometimes it can be floppy and come out of the corneal incision (prolapse). This may require further intervention and may also result in a poorly functioning iris or pupil postoperatively and even to a hole in the iris leading to

minor visual disturbance. (Risk of mild iris trauma is approximately 1 in 1000, for severe approximately 1 in 10000)

**Corneal burn (RLE and CAT only)**

Rarely the edge of the cornea where the phacoemulsification probe enters the eye may become overheated and have a mild burn. This is usually self limited and heals with time (risk 1 in 1000).

**Under-correction / Over-correction**

Although we take great efforts to ensure that an appropriately powered artificial lens is placed in the eye to ensure the best possible refractive result the measurement techniques are not always 100% accurate particularly in very high myopic and hyperopic eyes and sometime the lens placed may leave you either slightly over or under corrected. Any residual refractive error may be easily corrected with LASIK surgery within 3 months after the operation.

**Infection**

A serious post-operative risk is infection inside the eye called endophthalmitis (risk is approximately 1 in 1500). Although this condition is potentially treatable, it can result in blindness in the affected eye. Unusual pain or decreasing loss of vision in the eye in the first 2-4 days postoperatively may be symptoms of an infection and you should contact your team at CATARACT MD immediately to evaluate.

**Retinal detachment**

This serious risk is more common in patients with pre-existing high levels of myopia or near sightedness (risk is between 1 in 100 and 1 in 1000 depending on age and degree of myopia) and if severe can cause visual loss and even blindness of the eye. This is when the retina peels off the back of the eye. Precautions to prevent the risk of this complication may be taken in patients with high degree of myopia (they include laser treatment to the periphery of the retina). If the complication is caught and treated early this condition may not cause any serious loss of vision.

**Retinal swelling**

Properly known as Cystoid Macular Edema or CME, this generally not serious complication occurs in approximately 3% of cases and involves usually temporary swelling of the central retina leading to some visual distortion but can be treated with additional eye drops and usually resolves completely. Only occasionally does it cause some permanent small decrease in best visual acuity. The risk for CME is higher in patients with high hyperopia.

**Corneal clouding**

Properly known as corneal edema this condition occurs as a result of the cornea not being able to pump out water due to damage of the inside layer called the endothelium. As you get older the endothelium of the cornea becomes less effective in pumping water out, and introcular surgery can speed up this natural weakening of the corneal endothelium to the point where the cornea starts to retain water and as a result swells up and becomes opaque leading to cloudy vision. If mild, this condition is treated with some special eye drops, and if severe with a corneal transplant. Risk of severe corneal edema is approximately 1 in 1000.

**Wound leak**

Rarely the microincision in the cornea used to enter the eye may leak post-operatively and often all that is necessary is to place a contact lens on the eye until it seals. Rarely does it require going back to the operating room to place a stitch to close the wound (risk 1 in 1000).

**Displaced lens**

Sometimes the IOL which has been placed in the eye can dislocate or shift, either from the manner in which the lens capsule in your eye heals or possibly from trauma to the eye post-operatively. Dislocation of the lens can lead to a change in your vision, and possibly to an increase in halos, starbursts, glare and ghosting. This dislocation may require surgical intervention to reposition the lens, or possibly glasses to correct for the change in your prescription. Risk is approximately 1 in 1000.

**Floaters**

Usually known as Posterior Vitreous Detachment (PVD), this condition can occur after any kind of intraocular procedure. This occurs because of physiological changes in the eye that cause the vitreous gel to detach from the retina which can lead to the presence of floating black spots in your vision. This can last a few weeks, but may last as long as many months. This condition is benign and does not require corrective surgery.

**Halos, Starbursts, Glare, Ghosting**

Some patients do not see as clearly at night or in dim light and may notice an optical effect called a "halo" or a "starburst" around lights and illuminated objects after the procedure. These symptoms usually arise from optical aberrations induced by the intraocular lens (IOL) placed in the eye. Patients who notice these effects may need to wear glasses to drive at night. Glare and halo could be permanent, and this would be more likely to occur in patients with larger-than-average pupil size. Halos often result when a patient's night time pupil size is larger than the IOL optic zone size. Given the fact that we use IOL's with large optic zones, permanent halos are a rare phenomenon. The possibility of having difficulty functioning at night is highly remote (approximately less than 1 on 1000).

**Inflammation in the Eye**

Some patients may develop some usually temporary inflammation in the eye called either iritis or uveitis. This inflammation usually resolves with the administration of steroid drops.

**Pressure in the Eye**

Pressure in the eye can occur for several possible reasons after the procedure. Immediately after the procedure, some eyes react to the gels used in the operation by developing a temporary pressure spike. This can be treated by pills and drops. The steroid drops used during the first week after surgery may, on rare occasions, cause increased pressure in the eye in certain individuals ("steroid responders"). Finally, retained lens fragments and/or inflammation in the eye can increase the pressure. The increased pressure typically drops to normal levels upon cessation of steroid therapy. If the pressure is significantly elevated, it will need to be closely monitored and may require additional topical and/or oral medications. It is important for you to attend scheduled follow-up visits to monitor your eye pressure in order to modify the medication schedule as needed.

**Optical Imbalance**

If the surgeon performs the procedure on each eye on different days, the eyes may not be able to balance and focus properly until the procedure is performed on both eyes because there will be a power difference between the two eyes.

**Fragility on Impact**

For at least three months after the procedure, the corneal microincision should be considered fragile to direct trauma. When participating in sports or other activities involving possible contact with the eye during this period, you should wear protective eyewear. In any event, it is advisable to protect your eyes from direct trauma after the procedure as much as possible.

**Eyelid Droop**

The eyelids have a natural tendency to droop with age. The eyelid speculum that is used in the procedure may hasten this process slightly.

**Cataract formation (Phakic IOL Implantation only)**

Occasionally the intraocular contact lens placed in the Phakic IOL Implantation procedure may cause your natural lens in your eye to develop a cataract sooner than it may have without the Phakic IOL Implantation leading to a decrease in your vision and possibly the need for cataract surgery. (Risk is approximately 1 in 500).

**Ghost cataract (RLE and CAT only)**

Often after cataract surgery or RLE, the capsular bag the the IOL is placed into may begin to opacify (posterior capsule opacification or PCO) and cause a drop in vision. This aftercataract or ghost cataract is usually easily correctable using a special type of laser called a YAG laser which creates a hole in the posterior capsule allowing the vision to be restored again. (Risk approximately 1 in 100).

## LIMITS TO CORRECTION

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The procedure does not correct vision defects, such as those listed below, which do not arise from refractive errors. Patients with such conditions may be subject to additional risks and additional side effects and should discuss their condition with the surgeon and optometrist before deciding whether to have the procedure.

### Amblyopia

Amblyopia, or “lazy eye,” is a medical condition that develops in early childhood in which a person who has reduced vision in one eye relies on the other eye to focus. RLE, CAT or Phakic IOL Implantation will not reduce or eliminate amblyopia. It will not improve the vision in the amblyopic eye. If the patient experiences side effects or complications from the procedure in the eye that is able to focus, he or she could experience a loss of vision because that eye would no longer be able to compensate for the other.

### Strabismus

Strabismus is an eye disorder caused by a weakness in the eye muscles in which the eyes may not be aligned properly. RLE, CAT or Phakic IOL Implantation will not correct, reduce, eliminate or prevent strabismus. Patients with strabismus may develop double vision as a result of or as a side effect of the procedure.

### Presbyopia

As we age, the crystalline lens of the eye may lose its ability to accommodate to nearby objects. This condition, known as presbyopia, usually begins around the age of 40, and can most often be comfortably corrected through the use of reading glasses. RLE and CAT will result in presbyopia immediately post-operatively unless a special accommodative or multifocal type of IOL is placed in the eye. Phakic IOL Implantation will not prevent, and may unmask, the need for reading glasses in patients over forty years of age.



## PATIENT PROCESS AND PROCEDURE

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### Important Information for Contact Lens Wearers

Contact lenses can “mold” the corneal surface, which changes the corneal curvature and may lead to a change in your refraction (prescription). In order to properly calculate the treatment to correct your refractive error, you will have to stop wearing contact lenses at some stage prior to your appointments. In time, the cornea will return to its natural shape and size. CATARACT MD is dedicated to providing you with the most accurate treatment, and this can only be achieved if the corneal surface is stable and back to its natural shape.



For the vast majority of patients, the recommended minimum length of time for contact removal should suffice. However, the individual rate of corneal adjusting may vary. If your cornea is still adjusting at either the pre-operative or surgery appointment, you will be required to reschedule your appointment for a later date. This will allow the cornea to return to its natural shape and refraction to stabilize, thus providing you with an opportunity to attain the best possible outcome.

CATARACT MD cannot reimburse for time off work, hotel, airline tickets or any other expenses incurred due to rescheduling.

The difference in the length of times to remove contact lenses listed below is to ensure that the majority of out-of-town patients are not inconvenienced by rescheduling of appointments if corneal “molding” is apparent.

### Removal of Contact Lenses Prior to the Pre-operative Evaluation and Surgery Appointments



TYPE OF LENS WORN	BEFORE PRE-OPERATIVE EVALUATION		BEFORE SURGERY*
	Local Patient	Out-of-Town Patient	
<b>Soft Lenses</b> (daily wear, extended and toric)	Minimum 72 hours	Minimum 72 hours	Minimum 48 hours
<b>Hard Lenses</b> (toric and true/ Polymethyl methacrylate)	Minimum 2 weeks	Minimum 4 weeks	Minimum 48 hours
<b>Rigid Gas Permeables</b> (worn for 0-30+ yrs)	Minimum 2 weeks	Minimum 4 weeks	Minimum 48 hours

***\* Please note that this is only necessary in the eye(s) undergoing surgery and that patients can wear their contact lenses in the unoperated eye immediately following surgery.***

## What happens before the pre-operative assessment?

- Consult the Contact Lens Policy to determine minimum length contact lenses must be removed.
- You may have a pre-operative evaluation done with your own eye care professional at your expense.
- If you are having a pre-operative evaluation done with your own doctor, you are still required to have a complete pre-operative assessment at our Centre before your surgery date. We are unable to confirm your candidacy for RLE, CAT or Phakic IOL Implantation until our tests are completed.
- In consideration of others and to ensure your visit is as comfortable as possible, please do not bring children with you to the Centre. The duration of your stay will be approximately 2 to 3 hours.
- CATARACT MD will not be held responsible for any costs incurred for travel and/or accommodation, lost employment income or any additional expenses incurred due to the patient being deemed a non-candidate, requiring retreatments, rescheduling, or delays.
- A dilation will be performed, therefore you will experience blurred vision anywhere from 4-7 hours after.
- You may not be able to return to work after the evaluation.
- Eyes may be sensitive to light, so please bring a pair of sunglasses.

## What happens before surgery?

- Consult the Contact Lens Policy to determine minimum length contact lenses must be removed.
- If you choose to have post-operative care with your own eye care professional at your expense, please book your appointments prior to your surgery date, and be prepared to give our Centre the name of the eye care professional responsible for your follow-up. Your follow-up visits should take place at 1-2 weeks, and 1 month following RLE and CAT, with additional visits required for Phakic IOL Implantation. These exams are done Monday-Friday, with an additional charge for weekend exams.
- Please arrange alternative transportation for after your surgery, as we do not advise driving long distances for approximately 3 days after the procedure.
- Depending upon your occupation, you may need to arrange to be away from work for up to 7 days following your surgery.
- There are generally no restrictions on eating or taking medications before or on your surgery day. However, please advise us of any medications you are taking. 
- Our Patient Care Centre will be happy to provide you with referrals for travel and accommodation, although these remain your responsibility.
- If traveling from outside Canada, please remember to carry proper identification, such as your passport and/or other proof of citizenship.
- RLE, CAT and Phakic IOL Implantation are medical procedures and, as such, there is a possibility that you might need to extend your stay due to the healing process of your eyes. In this case, any additional travel and/or accommodation fees will be your responsibility.
- It is important not to wear eye makeup for at least 3 days before surgery and the day of the surgery. For your security, the procedure may be postponed if makeup is detected. 

**The day of surgery**





- You can expect to feel nervous, anxious or excited prior to your procedure. This is a completely natural, normal response.
- Please pre-arrange alternate transportation for after your surgery.
- Please be aware that your eyes will be irritated and light sensitive following the procedure. This usually diminishes within 24 hours after surgery.
- Do not use any make-up or any alcohol-based or scented products the day of surgery.
- We recommend avoiding alcohol 24 hours prior to and 24 hours after your surgery, as this tends to dehydrate the tissues and can delay the healing process.
- Wear comfortable clothing on your surgery day. Please do not wear clothing, such as wool or fleece, which may generate lint in the surgical suite.
- In consideration of others and to ensure that your visit is as comfortable as possible, we ask that you do not bring children to the Centre. The duration of your visit will be approximately 2 to 3 hours.
- No short-distance driving for at least 24hrs. No long-distance driving for 3 days.

**What happens after the procedure?**

Please remember that your follow-up care is as important as the actual procedure.

- Wear the sunglasses provided. Most other varieties do not provide adequate protection. Follow the eye drop regimen recommended by the surgeon.
- Your first mandatory post-operative appointment will take place at our Centre within 24 hours following your surgery. Your appointment time will be given to you immediately after your surgery.
- Following your 24-hour visit you are required to attend 2 additional post-operative appointments (more in the case of Phakic IOL Implantation). Post-operative examinations are required at 1 to 2 weeks after surgery, as well as 2 to 3 months later for RLE and CAT, with annual appointments included for 3 years following your surgery. Please note, however, that annual visits are optional. Post-operative exams may be done Monday through Friday, with an additional charge for weekend appointments. Post-operative examinations are included in the price of surgery provided that they are conducted at the same location where your procedure was performed. If you wish to schedule your post-operative visits at another CATARACT MD location, an additional fee of \$49 (price subject to change without notice) per visit will apply.
- If you choose to use your own eye care professional, your doctor will require post-operative forms. After your 24-hour post-operative appointment you will receive, via fax or mail or in person, your refractive surgical report and post-op form for your own eye care doctor.

## RECOMMENDED ACTIVITY SCHEDULE FOLLOWING UNCOMPLICATED SURGERY

<p><b>Day of surgery</b></p>	<ul style="list-style-type: none"> <li>○ The day of surgery should be a day of rest.</li> <li>○ Always be very careful about activities where the eye may be poked, rubbed or touched.</li> <li>○ <u>Always</u> avoid rubbing eyes – instead, use lubricant drops for irritation.</li> <li>○ Avoid staring without lubricating the eyes.</li> <li>○ Take a bath instead of a shower. Avoid soap and water in the eyes.</li> </ul>
<p><b>24 hours after surgery</b></p>	<ul style="list-style-type: none"> <li>○ Shower (but continue to avoid any soap or water in the eyes).</li> <li>○ Restrict movement to light activities. Work should probably be avoided. Work at home is acceptable.</li> <li>○ Driving short distances after the eye examination is acceptable if adequate vision is confirmed at the post-operative evaluation.</li> <li>○ Reading, watching TV and computer work is acceptable, but it is very important to keep eyes well-lubricated.</li> <li>○ Flying in airplanes is acceptable but keep eyes generously lubricated (every 30 minutes) – airplanes have very dry air.</li> <li>○ Apply face makeup (but not eye makeup).</li> <li>○ Do office work.</li> </ul> 
<p><b>Day 3 activities</b></p>	<ul style="list-style-type: none"> <li>○ Light exercise (e.g. treadmill, Stairmaster, stationary bike).</li> <li>○ Playing with children (be careful).</li> <li>○ Moderate alcohol consumption may be resumed.</li> <li>○ Lifting weights.</li> </ul> 
<p><b>Day 7 activities</b></p>	<ul style="list-style-type: none"> <li>○ Applying eye makeup (avoid touching the eyes).</li> <li>○ Jogging outdoors.</li> <li>○ Rollerblading.</li> <li>○ Relaxed bicycling (no mountain biking).</li> <li>○ Playing golf.</li> <li>○ Sun-tanning and salon tanning (wear eye protection; after PRK, wait at least 1 month before tanning).</li> <li>○ Motorcycling; snowmobiling; boating (wear eye protection).</li> <li>○ Skiing (with caution and eye protection).</li> </ul> 
<p><b>Day 14 activities</b></p>	<ul style="list-style-type: none"> <li>○ Hockey.</li> </ul>
<p><b>Activities that can begin at 1 month with eye protection</b></p>	<ul style="list-style-type: none"> <li>○ Racquet sports – tennis, squash, racquetball, badminton (but always wear eye protection).</li> <li>○ Swimming.</li> <li>○ Scuba diving; snorkeling.</li> <li>○ Sailing.</li> <li>○ Sun-tanning and salon tanning for PRK patients.</li> <li>○ Dirt biking; mountain biking.</li> <li>○ Parachuting.</li> <li>○ Baseball; basketball; football; soccer.</li> </ul> 
<p><b>Activities that can begin at 3 months with eye protection</b></p>	<p>Proceed with caution as these activities have a high risk of water being forced into the eyes:</p> <ul style="list-style-type: none"> <li>○ Water skiing; wind surfing.</li> <li>○ Kayaking.</li> <li>○ Surfing.</li> </ul>